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Original Articles

COCCIDIOIDAL GRANULOMA.

REVIEW OF THE EIGHTEEN CASES AND REPORTS OF CASES FIFTEEN AND SIXTEEN.

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SAN FRANCISCO.

The recognition, within a few years, of a comparatively large number of extremely fatal cases of a hitherto unknown disease, seems of sufficient interest to warrant me in presenting the last of these cases, together with a history of the findings in the other cases, the localities from which they came and a statement of certain experimental data in regard to the possible modes of infection.

A review by Ricketts[1] on oidiomycosis gives an interesting statement of the pathogenicity of the moulds that belong to this class and a discussion of their relation to each other. He dwells at great length on the cases of blastomycetic dermatitis, occurring in the middle West, reviews fourteen old cases of this disorder and reports several more which he has collected. He also reviews the cases of coccidioidal granuloma and considers that there is a close relation between it and blastomycetic dermatitis and also Busse's saccharomycosis hominis.

Ophuls[2] reviews the published cases of coccidioidal granuloma, and in 1905, at the annual session of the American Medical Association, gave in a supplementary paper the cases that have occurred since. He pointed out very plainly certain essential differences between this disease and blastomycetic dermatitis and reviewed the morphologic and histologic studies of the condition so thoroughly, that it seems unnecessary to go into them here. It is sufficient to state that in coccidioidal granuloma there are certain characteristics which differ decidedly from blastomycetic dermatitis. The differences in the behavior of the two organisms on culture media are very striking; even in the organisms of blastomycetic dermatitis, which most closely resemble those of coccidioidal granuloma, there are essential differences. It must be apparent that no one mould is responsible for the various lesions which Ricketts groups under the name of blastomycetic dermatitis, and he makes clear in his tabulation of the morphologic characteristics that some resemble the organism of coccidioidal granuloma more than others do. On agar the growths of the coccidioidal granuloma mould are all sharply defined even when grown on dry media where the mycelia are especially profuse. This is not true of any of the growths from blastomycetic dermatitis. The mould from coccidioidal granuloma is never found in the budding state in tissue, although in pus withdrawn from abscess cavities, beautiful examples of its growth by budding are shown. Cutaneous lesions are often entirely secondary in coccidioidal granuloma and may even be wanting altogether. Generalized infections are the rule and the only patient known positively to be still alive, is a man with lesions in the ankle, whose foot was promptly amputated. He has been reëxamined within a few weeks and at the time there were no signs of any further involvement of the body. Two of the patients were discharged from the hospital benefited, but nothing has been heard of them since and it seems probable that they could have been traced were they still alive. Only one of the cases of blastomycetic dermatitis became subsequently a generalized infection and the patient died from the disease. There is good evidence that cases of blastomycetic dermatitis have been held in abeyance or cured by potassium iodid. This has been very thoroughly tried in coccidioidal granuloma in a number of cases (I can speak most positively for the one I am reporting), and there was not the slightest benefit from it.

Lesions of coccidioidal granuloma are almost invariably progressive, with marked tendency to dissemination by lymph and blood currents. In very rare instances, healed lesions have been observed and in a few of the cases the course of the disease was extremely low. It is probable that the skin lesions were primary in some of the cases, particularly as in those cases where skin manifestations were noted before other symptoms, they occurred always on exposed parts.

Attempts were made to transmit the disease to guinea-pigs through original cultures from Case 15, in the following manner: Cultures known to have reached the spore-forming stage were transferred to the nostrils of pigs who were kept in glass cases. Another set of pigs were fed on similar cultures. A male pig was inoculated intraperitoneally and because of the characteristic genital lesions in pigs so inoculated, as pointed out by Ophuls, the experiment of transmission was tried by placing him in a cage with female pigs.

The secondary skin lesions are undoubtedly due to emboli in the blood current and of course occur anywhere. So far as I know no blood cultures have been attempted and it is hoped that this may be done in the cases that are likely to follow. The diagnosis of the disease is so easy after one has once known of its existence that ample opportunity for studies of the infectious nature of the blood must present itself. I regret exceedingly not having tried it in Case 15.

CASE 15.—S. K., aged 25, Japanese laborer, consulted me Feb. 22, 1906.

Past History.—His past history is negative to time of leaving Japan in 1903. He lived in Honolulu two years, came to California in June, 1905, and entered the employ of the Southern Pacific Company at Bakersfield. He worked in an extra gang along the line from Bakersfield to Tulare and came to the hospital from Tulare, where he had been working for a month. While in Bakersfield, he had what was regarded as beriberi for a month; the attack was not severe enough to keep him from work. He recovered from this and felt well up to Nov. 9, 1905. Previous to this he had good health. He

1. Journal of Medical Research, vol. vi, No. 3.
2. Journal of Experimental Medicine, vol. vi.

never had syphilis or gonorrhea; he does not remember having had a break in the skin at any time, certainly he has had no skin sores.

Present Illness.—On Nov. 9, 1905, he had a vomiting spell and felt feverish. He thought he had caught cold, on account of a troublesome cough. He came to the Southern Pacific Hospital on Nov. 13, 1905, complaining of pain in his chest, a cough, constipation, slight headache, with pain in right ankle and left sternoclavicular articulation. The pain was not severe or constant and occurred only on moving the joints. Temperature on admission was 100.8.

Examination.—Nutrition was good. Tongue was slightly coated. Heart sounds were normal. There was normal resonance over the chest. Abdomen was normal. No cutaneous lesions could be seen anywhere. There was no enlargement of glands. There was an old hydrocele on the left side. None of his joints was swollen or sensitive to touch and there was no impairment in function in any of his joints. Nerve tracts were not tender and there was no edema.

Course of Disease.—During the first week in the hospital the pain began to be more severe and more constant in the right

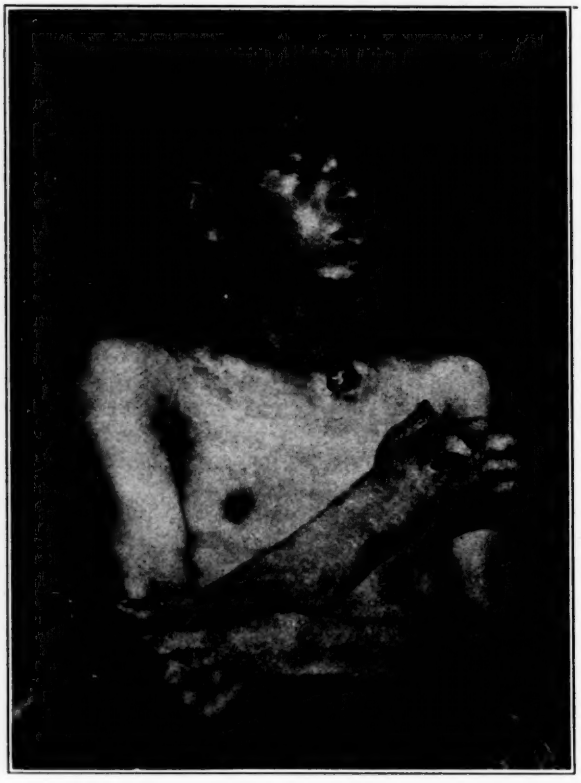

Fig. 1.—Case 15.

ankle and left sternoclavicular articulation. These joints were not red or tender. Other joints became painful on movement, the right wrist and left clavicularscapular articulations being attacked successively. Four weeks later a fluctuating swelling appeared in the region of the right internal malleolus. This was followed within a period of twelve or fourteen days, by the appearance of similar fluctuating swellings in the following places successively: Dorsum of right hand; right supraclavicular fossa; left supraspinous fossa; left sternoclavicular articulation. At this time the right inguinal, the epitrochlear glands on both sides and the right cervical glands became enlarged. The swellings developed with great rapidity for two or three days, but after that did not apparently increase in size or change in appearance or consistency. There was no redness, tenderness or edema of the skin covering them. There was no pain at any time at the swelling over the right supraclavicular fossa. At the right sternoclavicular articulation crepitation could be elicited. The swelling over the right internal malleolus was incised and a seropurulent fluid evacuated. Necrotic bone was found to exist. (In order to get a specimen free from contamination the swelling on the dorsum of the hand was aspirated and smears made. Examination was negative.) A few days later the swellings over the right supraclavicular fossa, left sternoclavicular articulation and left supraspinous fossa were incised and curetted. The left sternoclavicular articulation was found to be necrotic and also the the inner end of the clavicle. The spine of the scapula was found to be necrotic. The cavity in the right supraclavicular fossa did not communicate with the bone at any time, but extended between the layers of fascia toward the right pleural cavity. The wounds were packed with iodoform gauze, saturated with iodoform emulsion. Specimens of the pus and necrotic tissue were submitted to the laboratory, and pure cultures of the mould of coccidioidal granuloma obtained. A clinical diagnosis was made by several doctors before this.

Patient lost steadily in weight and there was considerable anorexia. Bowels were regular at this time (eighth week of disease). Cutaneous lesions appeared (having no connection with bone or joints) over the right malar bone, on the chin about an inch on left side of the symphysis, posterior surface of left forearm, on posterior surface of right forearm and on right thigh. They began as papillæ, which became converted into flat papillary tumors, circular in shape, covered with crusts. On removal of the crust, pus escaped and a shallow ulcer was seen with an uneven floor, which bled easily on being touched. These ulcers continued to increase in size and in the case of the one on the chin, in depth, until it reached nearly to the bone. The patient's temperature was variable, at times normal, then, again 99 in the morning and 100 or 101 in the evening. During the last two weeks it was higher, sometimes 100 in the morning and 102 or 103 in the evening. During the last 48 hours the abdomen became distended and the temperature was 104 in the evening. No special tenderness.

Urinalysis: December 30: 1020; acid; trace albumin; few hyaline and fine granular casts.

Blood Examination: Jan. 1, 1906. Reds, 2,500,000; whites, 13,000; 79 per cent. polymorphonuclears; 17 per cent. small; 2 per cent. large; 2 per cent. eosinophiles; hemoglobin, 50.

Treatment.—Patient was given potassium iodid in increasing doses three times a day and tonics. No benefit followed medication. The man died Jan. 23, 1906.

Autopsy Report by Dr. Mary Halton.—Body of a fair-sized Japanese male. Condition of nutrition very poor. Small superficial ulceration about the size of a ten-cent piece over anterior half of right zygoma. There is conspicuous absence of redness or infiltration around the ulceration and this is true of every lesion found on this patient. The floor of the ulcer is of a dirty grayish color and is moderately moist. The ulceration is very shallow and lacks any punched out appearance. Practically no red granulation tissue is to be seen.

On left side of chin is a small, incised, rather superficial abscess. This contains a small quantity of creamy yellow pus. There is no redness or thickening whatever about the abscess. Abscess wall is of a yellowish white color and rather thin. No connection was found between this abscess and the bone. Many cervical glands both anterior and posterior on right side enlarged, movable, rather soft. Largest about the size of a hazelnut. Incised they appear to be very largely broken down into a thick yellowish pus.

In right supraclavicular fossa is an incision about 6.5x10 cm. long. This leads right into an irregular labyrinthine abscess cavity burrowing between the layers of cervical fascia in many directions, more especially downward. There is a large quantity of thick, yellow pus in this abscess cavity. Upper and inner surface of inner third of clavicle is eroded.

There is an incision about 5 cm. long over left sternoclavicular articulation running out along the inner third of left clavicle. Sternoclavicular joint is disintegrated and the clavicle is necrotic for a distance of about half an inch. Sternum is also eroded. Cavity contains much thick pus. Incised abscess in outer half of left supraspinous fossa. The abscess extends outward toward acromion process, and outer third of spine of scapula shows superficial necrosis. This abscess also shows much thick creamy pus.

Dorsal surface of right hand shows large incised abscess cavity. There is some edema extending over metacarpal region of

this hand. Third and fourth metacarpal bones show extensive superficial erosion. Same creamy pus found in this cavity. On extensor surface, upper third left forearm is a small, shallow ulceration about 2 cm. in diameter. The description of ulceration over zygoma will exactly correspond to the description of this ulcer. There is a similar, small ulceration on lower third extensor surface right forearm. Epitrochlear glands palpable, largest on right side. On right thigh, outer side, upper third, is a small ulceration about 2.5 cm. in diameter. The floor of this ulcer, unlike the others, shows a few red granulations, otherwise it is practically the same.

Right ankle is much swollen. There is a large incision over internal malleolus. A sinus leads into ankle joint which contains about 10 c.c. of thick creamy pus. The internal malleolus is about half gone, what remains shows an eroded surface. The astragalus and calcaneum show a roughening at edges of articulations. None of the bone lesions were of the soft spongy type. The bone left in all cases was very hard and showed an eroded surface.

In apex of right pleural cavity is a small abscess about the size of a dime, pointing into the pleural cavity and only covered by a thin layer of parietal pleura. With slight trauma this abscess was made to rupture into the pleural cavity, and the abscess was then found to be continuous with the large burrowing abscess of the neck on that side. A few adhesions were seen between the apex of right lung and sternoclavicular articulations. No fluid in right pleural cavity. Mediastinal glands enlarged, largest about the size of almond. Left lung shows adhesions light and friable anteriorly and posteriorly; adhesions much thicker in apex near abscess above. About 10 c.c. of blood-tinged fluid in left pleural cavity. Right primary bronchus filled with pus-like fluid. No particular infection of bronchus. Weight of lung, 18 ounces; size, 23x16x5.5 cm. Lung somewhat edematous. Left lung, slight hypostasis and edema, otherwise apparently normal. Weight, 17 ounces; size, 23.5 x 14 x 5.5 cm. Abscess in one of the peribronchial glands.

Fig. 2.—Case 15.

Heart.—About 10 c.c. blood-stained fluid in pericardium. Weight, 9½ ounces. Valves normal. Muscles pale, otherwise normal.

Abdomen.—Lower border *transverse colon* at umbilicus.

Liver.—One inch below costal margin in mammary line. Upper border fifth rib.

Diaphragm.—Right side, fifth rib. Left side, fifth rib. (?)

Intestines.—Much distended. About 25 c.c. of seropurulent fluid in right iliac fossa. About 5 c.c. of thicker pus in rectal region. Appendix normal. Many heavy flakes of fibrinous exudate scattered over intestines, more marked in right iliac region. Conspicuous lack of injection of peritoneal surfaces, also a conspicuous lack of adhesions between the viscera.

Spleen.—12x6.5x2 cm.; weight 3 3/16 ounces. In hepatic fossa is about 50 c.c. of pus, held as an abscess by adhesions.

Liver.—Surface covered by heavy fibrinous deposits; weight, 3 pounds 4½ ounces; size, 29x14x7.75 cm. A little pale. Gall bladder normal.

Kidney.—Right: Weight, 5 ounces; size, 1.5x5.5x2.5 cm. Left: Weight, 5¼ ounces; size, 12x6.5x2.5 cm. Normal. Capsules strip easily. Markings normal. Both kidneys a little pale. Many mesenteric glands enlarged, the largest about the size of a bean. A number of hemolymph glands enlarged, largest about size of almond. Right adrenal normal.

Stomach.—Very much dilated; contains about 0.5 liter of partly digested food. Mucous membrane of cardia shows some digestion postmortem. Small quantity of food in intestines.

Pure cultures oidium coccidioides obtained from peritoneal fluid and unopened abscesses.

All cultures and specimens were lost in the fire.

CLINICAL SUMMARY OF CASES.

CASE 1.—Obvious lesions in skin; duration of disease, seven years; patient resided in San Joaquin Valley seven months. Extent of disease: Lymph glands and disseminated nodular lesions in internal organs.

CASE 2.—Obvious lesions in skin, local nine years; duration of disease, 10 years; patient resided in San Joaquin Valley several months. Extent of disease: Lymph glands, many chronic skin abscesses; old scars and consolidated areas in lungs, chronic nodular pleurisy, nodules in diaphragm, circumscribed chronic nodular peritonitis beneath diaphragm and in pelvis, peribronchial and retroperitoneal glands, spleen, adrenals, prostate, both epididymides, testes, seminal vesicles, osteomyelitis in left tibia and metacarpal bone of left hand.

CASE 3.—Obvious lesions in skin; duration of disease, three months; patient resided in San Joaquin Valley. Extent of disease: Regionary lymph glands certainly involved and signs of general infection. No autopsy.

CASE 4.—Obvious lesions in lungs; duration of disease, 10 months; patient resided in San Joaquin Valley, but time not known. Extent of disease: Skin, abscess of lung extending up into neck and abscess of liver, lymph glands, osteomyelitis.

CASE 5.—Obvious lesions in lungs; patient resided in San Joaquin Valley, but time not known. Extent of disease: Osteomyelitis and periostitis of frontal bone and both tibiæ, suppurative inflammation of right shoulder, both knees, elbows and wrists, abscess from lung extending into mediastinum and diaphragm, liver, retroperitoneal lymph glands, kidney, spleen.

CASE 6.—No clinical history; no history of residence. Extent of disease: Lungs, pericardium, spleen, kidney, meninges.

CASE 7.—Obvious lesions in lungs; duration of disease, three and a half months; patient resided in San Joaquin Valley for twelve days shortly before onset. Extent of disease: Meningitis.

CASE 8.—Obvious lesions in skin; no clinical history; patient resided in San Joaquin Valley. Extent of disease: Lung, spleen, liver, kidney and adrenals.

CASE 9.—Obvious lesions in skin. Duration of disease observed four months; patient discharged improved; resided in San Joaquin Valley several months. Extent of disease: Skin of foot, inguinal and cervical lymph glands, abscess anterior abdominal wall.

CASE 10.—Internal lesions; patient still alive two years later; resided in San Joaquin Valley some months. Extent of disease: Osteomyelitis, foot.

CASE 11.—Internal lesions; probably in lungs; patient supposed to be alive; resided in Sacramento Valley, never in San Joaquin. Extent of disease: Abscess of ribs.

CASE 12.—Internal lesions; probably in lungs. Duration of disease a few months; patient resided in San Joaquin Valley some months; lived in California in course of travels. Extent of disease: Caries at elbow, lungs, probably meninges.

CASE 13.—Wolbach, *Jour. Med. Research*, 1904, xiii, case not yet published.

CASE 14.—Obvious lesions in lung; Burrow's case (unpublished); duration of disease, eleven months; patient resided in San Joaquin Valley four months. Extent of disease: Multiple abscesses of lung, erosion of sternum, pleurisy with effusion, abscess of sacrum, wrist, kidney. Warty nodule on end of nose.

CASE 15.—Obvious lesion in intestinal tract; author's case. Duration of disease two and one-half months; patient resided in San Joaquin Valley five months. Extent of disease: Abscesses with caries of the adjacent bone in the right supraclavicular region, left sternoclavicular articulation, left supraspinous fossa, dorsum of right hand, right ankle, mediastinal glands, peribronchial glands; general involvement of the peritoneum with enlarged mesenteric glands, ulceration on right thigh, left forearm and over right zygoma, on chin.

CASE 16.—J. B., male, aged 28. Family history good; no tuberculosis.

History.—Patient has been two and one-half years in San Joaquin Valley; he worked on irrigating ditches near Fresno. Patient consulted his physician, complaining of general malaise; had no acute symptoms at any time. He has been treated for malaria; large doses of quinin having been administered without effect. He had had a sluggish punched-out ulcer on left wrist; red, with jagged edges; bathed in thin greenish pus: this had partially healed and broken down several times.

Examination.—Under the left clavicle he had an ovoid tumor 4x6 cm., slightly fluctuant and showing no signs of inflammatory process externally; another larger swelling of similar character appeared on the seventh, eighth and ninth ribs in the left parosternal line. On aspiration these tumors contained thin greenish pus loaded with coccidia-like bodies; these had a double contoured capsule but no budding forms; some of these bodies contained spores; with granular protoplasm. Owing to the patient's departure for Oregon, no cultures were made. The patient died in Oregon.

Remarks.—Three years after the first appearance of the ulcer on the wrist, a local physician who attended him in his last illness diagnosed the case as acute miliary tuberculosis. Autopsy showed the lungs to be studded with what appeared to be miliary tubercles and no further examination was made. No *Plasmodia malariæ* were found. The blood showed an eosinophilia of 12.5 per cent. The tumors had been diagnosed in Fresno as benign fatty tumors.

Since reporting the above cases, I have found two more cases in the service of Drs. E. R. Bryant and H. G. Gates of Los Angeles. The conditions presenting were as follows:

CASE 17.—K. N., Japanese, aged 28. Examined July 10, 1906. Employed as a track worker by the Southern Pacific Railway in the San Joaquin Valley for some months preceding his entrance to the hospital. His first symptoms were pain in the neighborhood of the ankle joint, with swelling and redness. Later cervical adenitis. All the lesions suppurated and were treated surgically and healed in from seven to ten days. In a few weeks further abscesses developed in the neighborhood of the former ones and on the face. None of the abscesses was found to connect with the bone. Cultures from a fresh abscess were made and showed the organism characteristic of coccidioidal granuloma. The patient ran a slight fever.

CASE 18.—T. C., Greek, aged 24. Lived in California three years and in San Joaquin Valley eighteen months. Examined July 10, 1906. Initial symptoms began about June 15, 1906, with pain in the left axilla simulating pleurisy. Shortly after there appeared a breaking out on the forehead and scalp, pustular in character. The skin lesions became covered with a thick crust, a cough developed and the patient ran an irregular fever and lost steadily in weight. On examination it was found that the crusts covered small ulcerating surfaces, and when removed a few drops of pus exuded. There were irregular areas of consolidation in the lungs, and loud, moist râles everywhere. Diagnosis was not confirmed by culture examination, but the skin lesions were quite characteristic and the lung condition not to be accounted for by tuberculosis or bronchopneumonia of the usual type.

SUMMARY.

Specimens of foot amputated by Dr. S. J. Gardner (Case 10) and autopsy specimens of Case 15 with cultures illustrating the morphology of the organisms of oidium coccidioides and blastomycetic dermatitis (obtained through Morrow from cultures sent him of the Chicago cases) were all destroyed by fire, although I had sets of cultures in three parts of town. The pigs also were destroyed before any definite facts were elicited.

Site of initial lesion:

Skin	5
Internal (chiefly lungs)	12
Unknown	1
	18

Residence in San Joaquin Valley:

Positive	14
Negative	1
No history	3
	18

Only one patient is known positively to be alive (Case 10) with local lesions in foot which was promptly amputated. There was no recurrence two years later. Two patients can not be traced. The majority lived less than one year and in all the patients with internal lesions who could be traced the disease was acute from the time the internal lesions began. The disease in California seems to be confined to the lower half of the San Joaquin Valley and has occurred chiefly among men working on railroad construction or irrigating ditches. The patient in the Sacramento case handled raw hides. No case has been found in women. The pericardium and heart alone have escaped involvement in the list of parts affected by the disease. The dissemination in the human being seems to be through both blood and lymph channels.

THE NATURE OF HERPES SIMPLEX, WITH A CONSIDERATION OF ITS DIAGNOSTIC AND PROGNOSTIC SIGNIFICANCE IN VARIOUS INFECTIOUS DISEASES.*

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There are many features of resemblance between simple herpes and herpes zoster, but there are also strong points of dissimilarity. In extreme cases of herpes, particularly about the face, it is sometimes difficult to distinguish between the zoster and simple forms. The clusters of firm vesicles on an erythematous base are identical in both. Histologically, the lesions in the skin and those in the affected nerve structures are practically the same in the two varieties. Thus far simple herpes might almost be regarded as a circumscribed abortive zoster; but there are other differentiating clinical features. The most important is the tendency to recurrence in simple herpes, contrasted with such a rarity of second attacks in herpes zoster as almost to suggest an immunity conferred. Indeed, second attacks of true zoster are no more common than second attacks of measles or scarlet fever. Head and Campbell met with only four cases in 400 cases of zoster. There are certain patients who are so subject to facial herpes that they suffer eight, ten or more attacks a year. In herpes zoster, moreover, there is more pain and the eruption follows in a general way the area of distribution of nerves. In elderly patients neuralgia may persist for weeks, months or years after the disappearance of the eruption.

* Read at the meeting of the Medical Society of the State of Pennsylvania, September, 1906.

PATHOLOGY OF BOTH FORMS OF HERPES.

Many years ago Barensprung suspected that herpes zoster of the trunk was caused by some lesion affecting the sensory spinal ganglia. Subsequent study has proved the correctness of this shrewd conjecture. A number of careful autopsies in persons who had suffered from herpes zoster have demonstrated gross structural change in the ganglia on the posterior roots of the spinal cord. The most important work on this subject has been published by Head and Campbell, who made autopsies on 19 patients who had recently or remotely suffered from herpes zoster. The acute changes found in herpes zoster consist in (1) extremely acute inflammation with exudation of small, round, deeply staining cells, (2) extravasation of blood, (3) destruction of ganglion cells and fibers, (4) inflammation of the sheath of the ganglion. The changes are always in the posterior roots, the anterior roots being normal. Herpes zoster, according to

A single patch of herpes simplex on palm of hand due to trivial cause. Similar patches are seen in meningitis of both the epidemic and tuberculous types.

those investigators, might be justly spoken of as an acute posterior poliomyelitis analogous to the acute anterior poliomyelitis causing infantile palsy. The only cranial nerve in whose distribution herpes zoster occurs is the trifacial, and similar changes to those found in the spinal ganglion have been found in the Gasserian ganglion. As early as 1871 Wyss[1] described structural alterations in this ganglion in a patient who died in the early stage of supraorbital herpes zoster. Sattler has also found changes in this ganglion in trifacial zoster. These findings are of importance in discussing the etiology of herpes facialis and its relation to herpes zoster, for in the former affection practically identical changes in the Gasserian ganglion have been found. W. T. Howard,[2] in an important contribution, gives the result of two carefully performed autopsies on patients dying of pneumonia, the one complicated by herpes zoster and the other by herpes labialis.

In the first case, a woman 63 years of age, died of double pneumonia. This patient had a well-marked herpes zoster in the mid-dorsal region of the left side in the spinal root ganglion (11th dorsal) corresponding to the area of the herpetic eruption. Pronounced changes were found consisting of congestion and hemorrhages in the capsular and interstitial tissues. At one site of the ganglion was cellular infiltration and destruction of a few ganglion cells; furthermore, amylaceous and hyaloid bodies in another portion of the ganglion.

The second case was one of croupous pneumonia in a man 41 years of age, who died on the sixth day of the illness. Two days before death a well-marked herpes of the upper lip and nose appeared, more extensive on the left side. The following changes were found:

Congestion of the veins about the origins of the superior maxillary branches of both Gasserian ganglia. Hemorrhages into the capsule and tissue, with interstitial cellular infiltration and compression and degeneration of the ganglion cells near the region of the superior maxillary branch of the left Gasserian ganglion. A few small areas of cellular infiltration in the same part of the right Gasserian ganglion. Marked congestion of the veins of the neck and brain and of the cerebral sinuses.

Councilman, Mallory and Wright[3] found acute inflammation of the Gasserian ganglion in cerebrospinal meningitis from extension of infection along the nerves.

ETIOLOGY OF HERPES ZOSTER AND SIMPLEX.

Both forms of herpes are due to a variety of etiologic factors. Though diverse in character, they all produce an intense irritation or actual inflammation of ganglia or nerve fibers. Exposure to cold or wet and sudden checking of profuse perspiration may act as causes; injury or pressure on a nerve trunk may produce herpes zoster. Herpes zoster has frequently been produced by the administration or accidental ingestion of arsenic, the drug setting up a neuritis. A number of dermatologists regard herpes as an infectious disease and quote epidemic prevalence of the affection in support of this view. Epidemics of herpes simplex are also occasionally observed. Zimmerlin[4] reports an epidemic of facial herpes occurring in the wing of a hospital at Basle, in which 16 out of 30 cases appeared in physicians and nurses.

Among the cases of herpes zoster and herpes simplex observed in the Polyclinic Hospital, I have never noted any particular evidence of epidemicity nor have these affections been more prevalent at any particular season of the year. We have treaterd 146 cases of herpes zoster and 83 cases of herpes simplex. These occurred in the following months:

	Herpes Simplex.	Herpes Zoster.
January	10	13
February	8	5
March	6	12
April	7	11
May	7	8
June	10	16
July	14	19
August	6	10
September	5	13
October	10	12
November	4	16
December	6	11
Total	83	146

1. Wyss: Archiv. für. Derm. u. Syph., 1872.

2. W. T. Howard: Amer. Jour. Med. Sci., 1903, p. 255.

3. Mass. State Board of Health Reports, 1899.

4. Correspondenz Bl. f. Schweizer Aerzte, March 15, 1883.

An important etiologic factor is age. Childhood and early adult life are the ages at which most cases of herpes simplex and zoster occur. Fifty-five per cent. of the cases of herpes simplex and 48 per cent. of the cases of herpes zoster developed in patients between the age of 10 and 30 years.

HERPES IN INFECTIOUS DISEASES.

The occurrence of facial herpes, or, indeed, simple herpes anywhere on the cutaneous surface, is often of great diagnostic value in differentiating certain infectious diseases. The study of the incidence of this condition in various infectious processes shows that herpes is peculiarly related to certain diseases and forms an important part of their symptomatology. In certain other specific febrile disorders herpes occurs with great infrequency and even rarity.

Herpes in Croupous Pneumonia.—Many writers have indicated the great frequency with which attacks of herpes develop in the course of croupous pneumonia. It is said ordinarily to occur between the second and fifth days of the disease, although it may appear earlier or later than this period. Most writers state that it occurs in from 12 to 40 per cent. of the cases, and these figures are approximately correct. In 1,863 cases, most of which were collated by E. F. Wells,[5] herpes was present in 30.6 per cent. These cases were observed by ten physicians in various parts of both continents, and may, therefore, be accepted as indicating the general incidence of herpes in this disease. In some localities and in certain epidemics, wide variation in the frequency of herpes has been observed.

Hermann, for instance, noted herpes in 65 per cent. of 40 cases of pneumonia, whereas, in other epidemics, this symptom has been present in as low as 13 and even 7 per cent. of the cases. Concerning the prognostic value of herpes in pneumonia, reference will be made later.

Below is appended a table showing the frequency with which herpes has been observed by various writers:

HERPES IN CROUPOUS PNEUMONIA.

	Per cent.
Bleuler[6]	43
Drasche[7]	40
Volkmann[8]	13
Geissler,[9] 421 cases	43
Hawkins,[10] 220 cases	16
Hermann,[11] 40 cases	65
Rall[12]	34
Kissel[13]	100
Lebert[14]	13
Scheef,[15] 44 cases	20
Speck,[16] 50 cases	18
Shapira,[17] 173 cases	29
Short,[18] 286 cases	20
Townsend[19]	7
Waller,[20] 81 cases	47
Wünderlich,[21] 50 cases	50
Ziemssen[22]	50
E. F. Wells,[5] 498 cases	26

Herpes in Cerebrospinal Meningitis.—In cerebrospinal fever, herpes is a symptom of great diagnostic value; although it is generally stated that herpes is more common in croupous pneumonia than in any other disease, statistics do not seem to bear out this assertion, as will be seen from the subjoined table:

HERPES IN CEREBROSPINAL MENINGITIS.

	Per cent.
Tourdes	60
Leyden	75
Friis (Copenhagen) 54 of 107 cases	50
Jaffe (Hamburg)	41
Councilman et al. (Boston, 1897), 35 in 111 cases	31
Average	52

In the above reported figures, herpes was present on an average in 52.2 per cent. of the cases. As is true of other diseases, the incidence of herpes in cerebrospinal fever varies considerably in different epidemics, but the fact remains that it is a most common manifestation of the disease. The erythematous and petechial eruption which has given to the disease the name of spotted fever is less frequent than herpes, and in some countries, as, for instance, Germany, is of great rarity. Herpes, therefore, may be regarded as the most frequent cutaneous symptom of cerebrospinal fever, although it is not its most characteristic eruption. Given a patient suddenly ill with headache, retraction of the head and herpes, and we have a strongly suggestive picture of an oncoming cerebrospinal meningitis. Herpetic vesicles are not limited to the face alone, but occur on the neck or distal portions of the extremities. I recall seeing one patient in whom a patch of herpes was present on the last phalanx of the thumb. I have also, however, noted the appearance of herpetic vesicles on the finger in a case of tuberculous meningitis. Herpes accompanying very mild disturbances may likewise be circumscribed to the hand as in the photograph here reproduced. Herpes occurring in the course of cerebrospinal fever does not differ from ordinary herpetic attacks. Patches are at times more extensive, but frequently are quite limited as regards area covered.

Herpes in Malaria.—Malarial fever comes third in the group of diseases in which herpes is a prominent symptom. Griesinger[23] observed herpes in 117 out of 390 cases, or about 30 per cent. Kelsch and Kiener[24] believe it to be present in one-third of the cases. Its presence is of great value in diagnosis because of its comparative rarity in typhoid fever, a disease with which malaria may frequently at the outset be confounded. Herpes may occur in malaria during the cold or hot stage, or, indeed, at any time in the course of the disease.

Herpes in Influenza.—It is not rare for herpes to develop in the course of attacks of influenza. The German Collective Investigation Committee found this symptom present in 6 per cent. of the cases collated. Curtin and Watson[25] found herpes zoster more common than herpes labialis. In about 6,000 cases of influenza they observed herpes zoster six times and mention the fact that eleven cases were reported by two other physicians. "Herpes labialis was rare, differing in this respect from malarial fever."

Herpes in Typhoid Fever.—It has long been noted that herpes occurs with great infrequency in typhoid fever; indeed, to such an extent is this true that some writers erroneously allege that it does not occur at all. Osler's figures on the subject enable us to judge of the

5. E. F. Wells: THE JOURNAL A. M. A., May 26, 1894, p. 767.
6. Bleuler: Inaug. Diss., Zurich, 1865.
7. Drasche: Canstatt's Jahreab., 1860, vol. ci, p. 207.
8. Volkmann: Inaug. Diss. Erlangen, 147, p. 17.
9. Geissler: Arch. d. Heilkunde, 1861, p. 115.
10. Hawkins: Lancet, April 1, 1893.
11. Hermann: Lungenentzündung Münch., 1880, p. 36.
12. Rall: Pneumonie, Eulenberg, 1852, p. 159.
13. Kissel: Klinik d. Brustkrankheiten, Tübingen, vol. i.
14. Lebert: Inaug. Diss. Erlangen, 1887, p. 33.
15. Scheef: Inaug. Diss. Tübingen, 1882, p. 38.
16. Speck: Inaug Diss. Marburg, 1870, p. 30.
17. Shapira: Inaug. Diss. Wurzb., 1877, p. 58.
18. Short: Inaug. Diss. Wurzb., 1884, p. 58.
19. Townsend: THE JOURNAL A. M. A., Dec. 1, 1888, p. 789.
20. Waller: Op. cit., S. 4.
21. Wünderlich: Inaug. Diss. Tübingen, 1858, p. 59.
22. Ziemssen: Pleuritis u. Pneumonie, Berlin, 1863.
23. Griesinger: Traité des Malad. Infect., p. 59.
24. Kelsch and Kiener: Quoted by Mannaberg, Nothnagel's Spec. Path. u. Ther., 1899, 11, 130.
25. Curtin and Watson: Climatologist, Feb., 1892.

frequency of its development. Among 1,500 cases of typhoid fever, herpetic outbreaks were found in 20 patients, or a little more than 1 per cent. of the cases. In the Johns Hopkins series of 829 cases herpes was observed in 29 patients, or 3.5 per cent. D. J. M. Miller[26] recently observed 4 cases of herpes among 250 cases of typhoid fever examined. Many of the older writers maintained that even when all the characteristic symptoms of typhoid fever were present a case must be regarded as this disease, if herpes labialis developed. Some modern writers refer to herpes as negatively pathognomonic of typhoid fever. Certainly this symptom is so uncommon that the development of herpes in the course of a febrile attack would tentatively negative the diagnosis of typhoid fever. In acute tuberculosis and in typhus fever, both affections which may come into differential conflict with typhoid fever, herpes is occasionally observed.

Herpes in Relapsing Fever.—The occurrence of herpes in relapsing fever is likewise uncommon. Semon,[27] in an epidemic of relapsing fever in Berlin, observed only four cases of herpes in 160 cases of the disease.

Herpes in Other Diseases.—Concerning the frequency of herpes in the acute exanthematous diseases, no published figures are available as far as I have been able to ascertain. Herpetic outbreaks are of great rarity in smallpox. Among over 3,000 cases of smallpox that I have seen, I have observed but two cases of herpes; I am unable to present any figures in regard to the frequency of herpes in scarlet fever. I do not think, however, that this manifestation is so rare as in smallpox. From a general impression that I have received I should estimate that herpes occurs in about 3 per cent. of the cases. In diphtheria attacks of herpes are also occasionally observed.

THE PROGNOSTIC VALUE OF HERPES.

Many writers have insisted that the development of herpes in certain infectious diseases, notably pneumonia and malaria, is of distinct value in enabling one to forecast the outcome of the illness. In what manner the appearance of a few fever blisters becomes the harbinger of a favorable development of the disease and ultimate recovery can not be explained. The herpetic attack is sometimes regarded as analogous to a critical chill or discharge, but the time at which the herpes develops in the course of many illnesses precludes such an explanation. The extent to which herpes may be regarded as a symptom of favorable omen in pneumonia and malaria can not be justly estimated at the present time. Most authors, however, attribute to the development of this symptom a favorable prognostic significance. Osler, in speaking of herpes in pneumonia, conservatively says: "It is supposed to be of favorable prognosis, and figures have been quoted in proof of this assertion." The opinion that herpes was a favorable indication was believed many years ago. Hebra, the great Vienna dermatologist, did not share this view. In 1866 he wrote: "Observation teaches that this form of herpes is neither of good nor of bad augury with reference to the probable outcome of the disease which it accompanies." If we rely, however, on the statistics published we can not fail but be impressed by the remarkable discrepancy in the mortality of cases of pneumonia associated with herpes and those without this eruption.

Geissler presents strong evidence of the prognostic significance of herpes in 421 cases of pneumonia studied by him. Of 181 patients with pneumonia, with herpes, 17, or 9.3 per cent., died; of 239 without herpes, 70, or 29.3 per cent., died; 159 patients were over 30 years of age; of those, 50 had herpes and 10 patients, or 20 per cent., died; 109 had no herpes, and of this number 58 patients, or 53.2 per cent., died.

Sir Dyce Duckworth believes that herpes is a good sign in pneumonia, usually occurring in cases in which a well-defined crisis develops on the sixth day. Cases that are grave and prolonged with deferred crises usually do not present it.

In malarial fever, herpes is likewise alleged to constitute evidence of an early and favorable outcome of the disease. Dr. Arthur Powell, at whose hospital service in Assam, India, more than 100 patients with malaria are seen daily, states that the development of herpes is invariably an evidence of the cessation of the attack. He says: "If during an attack of remittent or intermittent fever, a patch of herpes breaks out on the lips, face or elsewhere, I always look on this as a sign that the malarial attack is over. In all my experience, I have never met a case to negative this theory, which I thought was well known by our profession." This may be true of malaria in India, but in this country herpes occurs often early in the course of malaria and in attacks that do not promptly cease after its appearance.

That herpes has any prognostic significance in cerebrospinal fever I can not from my experience with this disease believe, although some writers contend that it has. Tourdes is of the opinion that herpes is a symptom of good omen. Figures, however, do not appear to bear out such a contention. In an epidemic in Copenhagen, the mortality of cerebrospinal meningitis accompanied by herpes was 32.3 per cent., while in cases without herpes it was 35.5 per cent., too slight an increase to be significant.

Another form of simple herpes to which reference has not been made is herpes genitalis. This is often regarded as occurring reflexly from genital irritation. As Fournier, Bergh and Unna have pointed out, it is much more common in prostitutes than in married women; furthermore, it frequently follows gonorrhea and other venereal infections. It is not improbable, therefore, that, in the majority of cases, it may be of infectious origin, as are most, if not all, of the cases of facial herpes. Genital herpes commonly exhibits the same tendency to recurrence as is observed in some cases of facial herpes.

It would appear, therefore, that apart from traumatism to nerve structures most cases of herpes—herpes zoster, facial herpes and genital herpes—are of infectious origin. The probabilities are that a toxin or poison is absorbed which has a special affinity for nerve tissue, particularly for the cells of sensory ganglia. It is not necessary to assume that this poison which might be termed an "herpetoxin" is the result of any one specific micro-organism. While two of the diseases in which herpes is a prominent symptom (pneumonia and spotted fever) are of diplococcic origin, as is likewise gonorrhea, the third disease, malaria, is produced by an entirely different form of parasite. Just as rashes indistinguishable from that of scarlet fever may be produced by a variety of toxins and drugs, so may herpes be produced by certain toxins, and herpes zoster may be caused by arsenic. In the one instance we have an erythemogenic toxin or drug, and in the other a herpetogenic

26. International Clinics, iii. series 16.
27. Semon: Jour. of Cut. and Vener. Dis., 1884, vol. xi, p. 146

toxin or drug. That pneumonia, spotted fever and malaria should be so frequently accompanied by herpes and typhoid fever, smallpox and other exanthemata so rarely, can not in the present state of our knowledge be explained. It certainly seems reasonable to attribute the herpes to some peculiar quality of the associated toxin.

It must, of course, be remembered that some persons are peculiarly subject to simple herpes, accompanying coryza, gastric disturbances and other mild indispositions (see illustration). In such individuals there may be an unusual susceptibility of the nerve tissue to the action of toxins which in other persons might produce no herpetic outbreak. Certainly the well-established association of herpes with the three infectious diseases mentioned can not be explained on the basis of personal idiosyncrasy, for it is too well demonstrated by the extended observation of experienced clinicians in all countries.

In considering the diagnosis of a disease in which herpes develops, it is well, however, to obtain from the patient or his relatives some history as to the previous occurrence of herpetic attacks.

CONCLUSIONS.

1. Herpes zoster and herpes simplex—both the facial and genital varieties—while not clinically identical, are closely related. The histology of the cutaneous lesions and the observed changes in the nerve structures examined appear in all to be practically the same.

2. It is highly probable that the vast majority of all cases of herpes of the various types are the result of the action of a toxin. This proposition necessarily assumes the infectious origin of herpes.

3. The frequency of herpes simplex in certain infectious diseases and its rarity in others is evidence that the toxin must possess certain peculiar qualities in order to exercise a selective affinity for sensory nerve structures.

4. The toxins producing herpes simplex and herpes zoster are in all probability not the result of the action of any specific micro-organism. This is certainly true of the former and by analogy may be assumed to be true of the latter disease.

5. The three diseases in which an "herpetogenic" toxin develops with a fair degree of constancy are pneumonia, spotted fever and malaria. Its frequency in these diseases and its comparative rarity in typhoid fever and many other infectious maladies make its appearance a symptom of considerable diagnostic import.

6. In view of the tendency of certain individuals to recurrent attacks of facial herpes from slight indispositions the fact as to such a history should always be elicited before according to herpetic outbreaks the diagnostic value referred to.

The Model Medical Society Paper.—There is no doubt, says the *Jour. of the Minnesota State Med. Assn.*, that the model paper for a medical society or a medical journal is something very different from the average paper now prepared. To define what shall be a model is difficult, but it is possible to name some of its characteristics. It must contain something that will add to the general fund of medical knowledge, and while this something may be contained in a paragraph, it may need a setting to give it clearness and emphasis. Proper brevity is necessary both to maintain interest and to enhance its value. Definition or clearness of outline must be a characteristic of everything one writes. Combine these qualities in a subject of interest to the profession and we shall approximate a model paper.

SOME UNUSUAL OCULAR MANIFESTATIONS OF ARTERIOSCLEROSIS.*

WILLIAM ZENTMAYER, M.D.
PHILADELPHIA.

OPTIC ATROPHY.

The first anatomic demonstration of the pressure effects on the optic nerve of sclerosed vessels at the base of the brain was made by Michel[1] in 1877. This case is unique inasmuch as the resulting ocular disturbance was bilateral choked disc which Michel explained by assuming pressure on the lymph spaces of the optic nerve.

From time to time since the publication of this case others have appeared in literature, but it remained for Otto[2] in 1893 to present a large enough series of cases to permit of conclusions being drawn as to the nature of the gross and minute anatomic changes and of their possible clinical manifestations. In 11 of this group of 20 autopsies there were more or less marked changes in the form of the optic nerve consisting of a flattening and a subsequent atrophy of the nerve fibers, primarily centrally situated but later extending above and below, while in the two wings of the nerve thus formed the position and the relation of the nerve fibers remained normal. He concludes that the atrophy is a pure pressure one without inflammatory phenomena and that this atrophy may progress in an ascending and descending direction. He suggests that clinically simple slowly progressive optic nerve atrophy occurring in the aged may have this origin. In a subsequent article (1901) Otto[3] adds 4 cases of sclerosis of the carotid and ophthalmic arteries the findings in which confirmed the original as to the nature of the atrophy and the varying location corresponding to the position of the affected vessels. In all of these cases, so far as it was possible to determine, related ophthalmoscopic and functional changes were absent.

In 1891 Bernheimer[4] reported two interesting cases. In one the nerve was divided into two unequal longitudinal parts by the pressure of the sclerosed carotid and ophthalmic arteries on its ventral surface. In the second case the optic nerve was furrowed on its *dorsal surface* at the point where the dural sheath begins. He expresses the view later again set forth by Otto. He attributes the absence of clinical symptoms to the fact that in these cases the ophthalmic artery coursed parallel with the optic nerve fibers within the optic canal to its exit into the orbit; and that notwithstanding the marked changes, there could be no influence on the conductility of the nerve. When, however, the ophthalmic artery takes a right angled tangential course relative to the long axis of the nerve, the fibers must be destroyed by the pressure and produce an atrophy corresponding in degree to the depth of the furrow.

In 1902 Liebrecht[5] added 7 similar cases, all studied from an anatomic standpoint. From a consideration of these and the previously reported cases he finds that the most frequent seats of injury to the optic nerve through arteriosclerosis are: first, within the fibrous portion of the optic canal by imbedding of the ophthalmic artery into the nerve parallel to its long axis; the second is at

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Arch. f. Augenheilk., vol. xiv, p. 39. Türck's case (reported much earlier) was one of compression of the optic nerve by the artery pushed upward by a tumor.
2. Arch. f. Psych. u. Nervenk., vol. xxv, p. 559.
3. Arch. f. Augenheilk., vol. xliii, p. 104.
4. Arch. f. Ophth., vol. xxxvii, p. 37.
5. Arch. f. Augenheilk., vol. xliv, No. 3.

sharp free margin of the reduplicated dural sheath re it spans the nerve near the optic foramen; (the ve may be extensively compressed between this fibrous d above, and the ascending carotid below); the third midway between the canal and the chiasm, the place where the anterior cerebral artery above, and the carotid below, cross the nerve. He says that as to the functional disturbance occasioned we have no positive evidence but it may be assumed that as the result of injury at the first point we would have either no functional disturbance or an atypically placed scotoma; at the second, an incomplete or a total transverse atrophy of the nerve with corresponding visual defect; at the third, the lesion and the functional disturbance would vary with the relative position of the two vessels. He states that he has found some marked cases of diminished vision with no determinable cause which he would attribute to arteriosclerosis, and details one occurring in a woman 64 years of age where the atrophic process in the eyes had not taken place synchronously. Vision was reduced to fingers at 2m., and the fields were irregularly contracted especially in the inner halves, almost to fixation.

In 1904 C. S. Bull[6] reviewed the subject and stated that while he had "no certain data corroborated by autopsy.....which would transform a theory into a fact he has for years been convinced that arteriosclerosis of the ophthalmic and internal carotid arteries may affect the optic nerve more frequently and seriously than we have hitherto suspected."

The following interesting case of optic atrophy, in which the prodromal symptoms were of a nature to warrant the assumption of arteriosclerosis as the primary cause of the degeneration, is recorded because of the expressed views of the above quoted distinguished observers and as clinical evidence to substantiate them.

Case 1.—Mrs. A. T., aged 43, married; has seven children, all girls. She has had two miscarriages, one occurring between the births of the last two children and one since the birth of the last child.

History.—Aside from nasal catarrh and sick headache, which has become much less severe in the past four or five years, she was well until 15 years ago, when she had an attack of grip which left her with nervous prostration and insomnia, requiring the use of hypnotics. About this time she had metrorrhagia which lasted several months. Eight years ago she had a second attack of nervous prostration. Eighteen months ago she began to have attacks of dizziness, accompanied by temporary blindness. The blindness affected both eyes and lasted from five to ten minutes. At first both eyes recovered fully, but later the lower half of the right field would be slow to recover. This tardiness increased until, for a year past, this portion of the field has remained permanently blind. The left eye has been going through the same process, the upper half of the field, however, being slow in recovering. The visual disturbances occur at irregular intervals but seem more frequent during the menstrual period. The patient's mother died of tuberculosis of the lungs at 38 years of age, her father of heart disease at 50 years of age. She is in good physical condition except for a slight general arteriosclerosis. Dr. F. H. Weisenburg made a neurologic examination and found nothing abnormal.

Examination.—Examination of the eyes showed: Irides prompt to light and convergence. Convergence power weak. Slight left hyperphoria. Vision of R. E. 5/6, L. E. 5/6. Fields as shown in the accompanying illustration (Fig. 1).

Ophthalmoscopic examination: R. E., clear media. Disc vertically oval and pallid, especially in the upper half, where it is decidedly atrophic. Central physiologic excavation. The superior branches of the central artery are very markedly contracted with accompanying white lines. The corresponding vein is shrunken but not to so marked a degree. The inferior branch is a trifle smaller than normal, but the accompanying vein is normal. The scleral ring is sharply cut below and to the outside. The presence of arteriosclerosis is distinctly shown by the marked indentation of the inferior vein by the crossing artery (Fig. 2). L. E., media clear. Disc vertically oval and of a much better tint than that of the other eye, although the lower outer half is decidedly gray. The arteries are slightly reduced in size. The veins are also a trifle small, this being especially so of the inferior branch. The scleral ring is sharply cut in and out.

Treatment.—The patient was given potassium iodid in five grain doses; strychnin 1/30 gr. and nitroglycerin 1/100 gr. three times a day. Pearls of nitrite of amyl were ordered with directions to use them at the onset of the attacks. Two months later she reported having had but two attacks of blindness, both slight as compared to former ones. Four months later she stated that she had had no further attacks of total blindness, but had had spells of "swimming of the sight," lasting from three to five minutes, involving the whole field, and recently in the L. E. a sector defect of almost total darkness extending from fixation upwards and outwards, lasting about thirty minutes and disappearing gradually.

That the theory advanced for the causation of the atrophy in this case shall be upheld, it is necessary that not only should it accord with present conditions but that by it the various remarkable phases through which the case has passed may be satisfactorily interpreted.

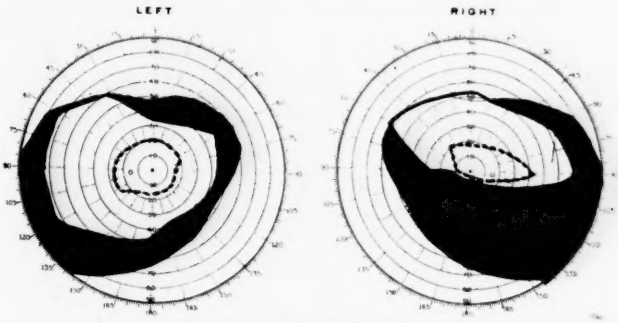

Fig. 1.—Eyefields in Case 1.

As seems well established, in the early stages of arteriosclerosis of the smaller vessels a spasm of the vessels may from time to time occur or during periods of low blood pressure collapse of the vessel may take place. If this occurred in the ophthalmic artery or certainly if in the central artery of the retina it would produce a transient blindness of the whole field. (It is claimed by some writers that, owing to the free anastomosis between the ophthalmic artery and the branches of the internal carotid, especially the facial, obstruction of the ophthalmic artery could not produce blindness.) This would account satisfactorily for the first symptom.

It has been shown that with sclerosis of the ophthalmic or internal carotid artery pressing the nerve upward against the unyielding edge of the internal end of the fibrous canal a transverse pressure atrophy beginning above and finally involving the entire diameter of the nerve, may occur. This would explain how, later, the vision was slow to recover in the lower field, and finally the blindness in this area became permanent. The advancing atrophy would doubtless at first impede the entrance of blood into this portion of the nerve and its conductility would but slowly recover. When the atrophy became complete and the process crept deeper into the nerve the lower field remained permanently blind. Or it may be that this sluggish return of vision with final

6. Annals of Ophth., 1904.

blindness in the lower field did not take place until the atrophy had spread forward and squeezed the superior branch of the central artery of the retina. Reference to the illustration will show that the division of the artery has taken place in the nerve so that pressure might readily affect one branch earlier than it did the other (Fig. 2).

SPASM OF THE CENTRAL ARTERY OF THE RETINA.

As early as 1869 von Graefe[7] recorded an instance of what he termed ischemia of the retina, the diagnosis resting on the presence of contracted arteries and blindness. The condition persisting unchanged for a period of 10 days, operative treatment in the form of an iridectomy on one eye and paracentesis on the other was carried out with a successful result, vision in one eye rising to normal.

In 1866 Rothmund[8] reported having observed the same clinical conditions in two young girls with a like fortunate outcome from operative interference. Some-

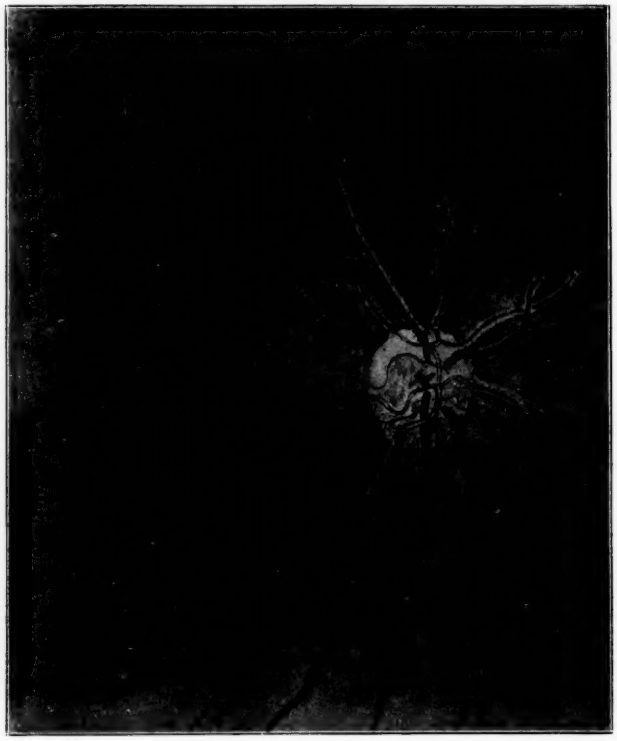

Fig. 2.—Fundus of R. E. in Case 1. Arteriosclerosis shown by indentation of inferior vein by the crossing artery.

what later, in 1874, Loring[9] published a similar case in a man having sclerosis of the aorta and hypertrophy of the left ventricle, in which recurring attacks of transient blindness resulted in permanent loss of sight. He believed that lowering of the blood pressure caused the attacks and that the final total blinding was due to secondary changes in the retina. Five years later Nettleship[10] attributed a similar case to lowered blood pressure.

Berger[11] was one of the first to assign to spasm of the central artery of the retina sudden blindness, he having assumed this to be the cause in a case of a woman 36 years of age, who had left hemicrania and recurring attacks of paresthesia and anesthesia of the left extremities, with blindness of the left eye, associated with pallid nerves and contracted vessels. Iridectomy was performed on the fifth day, with recovery of useful vision. Schnabel,[12], Galezowski[13] and Jäger[14] each report instances of intermittent ischemia of the retina which they laid to spasm. Galezowski's case terminated in thrombosis and atrophy. Schnabel's patient had also glaucoma, and Jäger's was suffering from intermittent fever. Mauthner[15] and Moos[16] believed the cause of visual obscuration in their cases to have been due to emboli. Mauthner supposed the cause to be the lodgment of an embolus in the ophthalmic artery at the place where the central artery of the retina is given off. In Moos' case, besides the retinal disturbance, there was transient diplopia, transient enlargement of the liver, recurring pericarditis, endocarditis and embolism of the mesenteric artery. Walton,[17] Landesberg[18] and Siegrist[19] have observed spasm of the central artery of the retina in migraine; Knies,[20] Klein[21] and H. Jackson,[22] in epilepsy, and Raynaud,[23] Weiss[24] and others, in symmetrical gangrene of the extremities. Barrett,[25] Noyes,[26] Nettleship,[27] Priestley Smith[28] and Posey[29] have all recorded instances of recurring, transient monocular blindness. Posey's cases were not dependent on the other possible causes which he gives for this symptom, namely, ciliary fatigue, glaucoma or migraine. Arteriosclerosis was present and the visual disturbance was assigned to spasm of the vessels. A very significant point brought out by Fischer[30] in his report of 5 cases of transient blindness is that in 45 cases of branch embolism recorded, transient total blindness, lasting from a few minutes to hours, preceded the final permanent limited blindness.

With this brief résumé of the cases in which the obstruction was, in nearly all, temporary and in which the cause was likely due, in some instances, to spasm, although this could only be surmised because of the presence of ischemia of the retina and because of the temporary nature of the functional disturbance, a personal observation in which the spasm of the central artery of the retina was repeatedly seen will be recorded.

On Nov. 23, 1905, I was asked by Dr. D. F. Harbridge of Philadelphia (to whom I am indebted for the privilege of reporting the case in abstract) to see the patient whose history follows:

CASE 2.—Mr. C., aged 49, stated that the day previously, while stooping, he noticed some difficulty with the sight of his left eye, and upon closing the right eye he found that the left was blind. The attack of blindness lasted about one minute. That day he had two or three subsequent spells. To-day he had four or five attacks in the forenoon, and between the hours of 2 and 4 p. m., while under observation, he had them as frequently as every half-hour, and they lasted from one-half to two minutes. The obscuration of the field begins in the

7. Arch. f. Ophth., vol. viii.
8. Klin. Monatsbl. f. Augenheilk., vol. iv, p. 106.
9. Am. Jour. of Ophth., 1874. (This and the following footnotes to 24, inclusive, are referred to in Wagenmann's article, Graefe's Arch., vol. xliv, but where possible the abstract was made from the original article.)
10. Brit. Med. Jour., 1897.
11. Michel's Jahrb., p. 350.
12. Arch. f. Augenheilk., xv, p. 379.
13. Rec. d'Ophth., 1882.
14. Abst. Graefe's Arch., vol. xliv.
15. Wien. med. Jahrb., vol. ii, 1873.
16. Virch. Arch., vol. xii, p. 58.
17. Journal of Nerv. and Mental Diseases, vol. xi, July.
18. Arch. f. Augenheilk., vol. vii, 1878.
19. Graefe's Arch., vol. xliv.
20. Bericht. d'Ophth. Ges., 1877 (Arch. f. Psych., vol. xx).
21. Graefe's Arch., vol. xliv.
22. Ophth. Rev., vol. iv.
23. Arch. Gén. de Méd., 1874.
24. Wien. Klin., vol. i, 1882.
25. Ophth. Rev., 1902.
26. Text-book, 1890.
27, 28, 29. Posey: THE JOURNAL A. M. A., May 31, 1902.
30. Fischer: "Uber Emboli des Art. Cent. Ret.," Leipzig, 1901.

periphery and is compared by the patient to the shimmer from ice-clad trees or to the movement of biograph pictures. Finally the field becomes totally dark. The clearing up begins in the periphery of the temporal field and with the same accompanying phenomena.

History.—The patient is a strong, stout man. Covering a period of one year he had severe attacks of vertigo seven years ago. In the spring of 1903 he had an attack of bronchopneumonia, followed by inflammatory rheumatism. Since the disappearance of the vertigo he has become subject to severe attacks of migraine occurring on the average of once in five weeks. Nine years ago he contracted syphilis. He has used liquor and tobacco to excess.

Dr. W. B. Stanton, who examined the condition of the patient's vascular system, states that there is no lung, kidney or heart lesion, but that there is a slight degree of sclerosis of the vessels. Dr. D. J. McCarthy reported that there is a symptom group suggestive of beginning tabes. The patient was given mixed treatment and nitroglycerin. Dr. Harbridge informs me that the attacks have become less frequent but that the optic nerves are becoming quite gray and that the retinal vessels are beginning to show evidences of arteriosclerosis.

Examination.—Ophthalmoscopic examination showed a moderate contraction and distinct flattening of the arteries and veins at the onset of an attack of blindness. When the blindness is complete the arteries become ribbon-like and lose their reflex and the veins, especially the superior branch, become very narrow. After a brief period there is a gradual refilling of the arteries and veins, the latter becoming greatly distended, particularly the inferior branch. During the last attack that was observed, the last of a long series occurring at half hour intervals, there appeared to be some retinal haze about the disc. There were never any macular changes. The pupil dilated synchronously with the loss of vision, and for a while after the attack exhibited hippus.

Dr. Harbridge will report the case in detail.

The opportunity of *repeatedly* observing this phenomenon is probably unique, as a search of the literature disclosed but 3 similar cases, one by Wagenmann,[31] who also was fortunate enough, on a single occasion, to observe the cycle of oncoming spasm, occlusion and relaxation of spasm. The second was by Benson,[32] who examined ophthalmoscopically a case during the existence of total blindness and during attacks of partial blindness. The third was that of Sachs,[33] who observed spasm of a branch of the central artery of the retina. Wagenmann's case briefly is as follows:

A man, aged 69 years, had for two months noticed frequent, and of late, almost daily attacks of blindness in the right eye, lasting from a few minutes to a few hours. He had had epileptiform attacks in childhood, but was now healthy except for arteriosclerosis.

The changes observed were, "in a short time perception of light was gone, and with it direct and consensual pupil reaction. Externally no change. Ophthalmoscopically, disc pale, arteries appeared as shiny streaks in which no blood columns could be seen, even with the direct method. Veins thread like. No pulsation on pressure. Soon the retina became cloudy and the fovea stood out as a round red spot. About ten minutes after the beginning of the attack a fine red line was seen by the indirect image to appear in the arteries, and immediately afterwards the veins became large. Thereupon the patient had perception of light, and the pupil reacted a little. In a few minutes the circulation, and with it the vision, was completely restored."

Following is an abstract of the case of Benson:

For more than four years a man, aged 32, in good health, had had numerous attacks of transient blindness, sometimes complete, at other times involving only a section of the field. During an attack of complete blindness the ophthalmoscopic examination revealed the inferior temporal artery entirely bloodless for a distance of four discs' diameter from its point of emergence. The bloodless section was seen to shift toward the periphery until it reached the next large bifurcation, when it suddenly disappeared, leaving the blood vessels normal. The same phenomena were noticed during attacks of partial blindness.

Sach's case resembled that of Benson:

In the affected eye a circular constriction would start from the papillary end of the inferior artery and travel to the point of first bifurcation, taking from three to five minutes to make the journey, a distance of one-half the disc's diameter. The fundus was typical of that embolism. When again seen three days later only the picture of embolism was present. The patient had arteriosclerosis.

The value of every such clinical observation will be appreciated on considering the uncertainty which exists as to the most common lesion leading to the fundus picture of obstruction of the central artery of the retina, an uncertainty which persists, notwithstanding the fact that almost a score of eyes thus affected have been examined anatomically. The reason for this being due, in part, to the long period of time which usually elapsed between the time of the occurrence of obstruction and the necessity for enucleation from secondary causes.

Thompson[34] has so recently brought together for critical consideration the arguments for and against the various conditions assigned as the cause that it is unnecessary at the present time to reconsider them. Suffice it to note that neither Reimar[35] nor Haab[36] is satisfied that any one of the anatomic studies has proven the existence of embolism and that Schweigger[37] has stated his belief that endarteritis is the usual cause and that early clouding of the retina with a cherry red spot would not be an early occurrence in embolism. Haab, in his able critical consideration of the subject, states that evidence of the occurrence of spasm of the central artery of the retina would render great service in explaining the prodromal periodic blindings and especially the filling of the retinal vessels that is seen immediately after the blinding. According to Haab the sequence of events, as the result of disease of the vessel walls would be: narrowing of the lumen of the vessels, but insufficient to interrupt the retinal function, followed by spasm of the vessel walls causing temporary blindness and, if a thrombus formed, permanent blindness. Kern[38] states that in 66 per cent. of cases of so-called embolism no assured source of embolus was present. He concludes that the cause is usually a local disease, such as atheroma, of the central artery.

Wagenmann says that where the intima is thickened the spasmodic contraction would be all the more likely to produce ischemia. He considers spasm of the coronary arteries with functional disturbance of the heart which occurs in arteriosclerosis of these vessels, an analogous condition.

An interesting feature in some of these cases has been the long period of time over which the blindness extended with ultimate restoration of vision. In von Graefe's and in Rothmund's cases several days inter-

31. Graefe's Arch., vol. xliv.
32. Report Internat. Ophth. Cong., 1904.
33. Beiträg. z. Augenheilk., vol. xliv.
34. Ophth. Rev., 1902.
35. Arch. f. Augenheilk., vol. xxxviii.
36. Norris and Oliver. System of Diseases of the Eye.
37. Knapp's Arch. of Ophth., 1901.
38. Inaug., Dissert. (Refer to Wagenmann, footnote 31.)

vened between the onset and recovery, and in the case of Noyes, where repeated previous attacks of transient blindness authenticated the cause as a vascular one, blindness persisted 16 hours with recovery, and recently Barrett recorded an instance where the attack lasted two hours with a return to normal vision. It would seem that in these cases sufficient circulation remains to sustain the anatomic integrity, but not the functional activity of the retina.

Prognosis.—In considering the prognosis of transient blindness a distinction should be made between those cases where the attack is but a symptom of a general condition in which spasm is a feature, as epilepsy, Raynaud's disease, migraine and the ague of intermittent fever, in which the prognosis is good, and where it is due probably to a local manifestation of a general vascular disturbance in which the prognosis is grave. In the latter class the danger lies mainly in the secondary effect of the spasm, for, excluding the cases in which a reasonable doubt may exist as to the cause of the ischemia, there yet remain several cases in which, although the blindness lasted for many hours, a full recovery of retinal function followed.

Treatment.—The indications to be met are those of early arteriosclerosis, high arterial tension and spasm. The only drug that has secured any standing in combating this insidious affection is the iodid of potassium. It is to be given in doses of from 3 to 5 gr. three times a day in large draughts of water after meals so soon as there is any indication of capillary fibrosis, and is to be continued in interrupted courses thereafter. It should be needless to add that moderation in eating, drinking, exercise, pursuit of business and pleasure is more essential than regularity in taking medicine.

The nitrites are potent in reducing arterial tension. Nitroglycerin commends itself because of its convenience in administration. Nitrite of amyl, by reason of its quick action, is especially indicated for the attack, but frequently appears to have but little effect in modifying it. Heart tonics are usually called for to improve the circulation. The value of massage of the eyeball has been demonstrated in the treatment of cases exhibiting the symptoms of obstruction and should always be tried.

The question of the advisability of performing an iridectomy must be decided for each individual case. We have seen that recovery has followed alteration of circulation brought about by performing paracentesis of the anterior chamber and that iridectomy has failed in the one case of undoubted spasm in which it was done. The performance of an operation whose action is problematic for the relief of a condition which, if not problematic, is perhaps only the local expression of a general condition will not appeal to every one. It would seem that the operation might be justified where the obstruction had resisted the usual means employed for relief until permanent injury to vision was likely to result. But that it would guard against subsequent attacks is scarcely to be expected.

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DISCUSSION.

DR. D. J. MCCARTHY, Philadelphia, confined himself to a consideration of the subject of arteriosclerosis of the central nervous system. With reference to the first of these cases he called attention to some observations of his own as to the relation of the internal carotid artery after it reaches the brain. It must be remembered that it passes through a bony canal which prevents any extension of the pulse wave, this being more or less of a conservative provision of Nature to prevent a high tension pulse wave doing damage to the delicate nervous structures. Dr. McCarthy thinks that in cases of hypertension leading to arteriosclerosis the first pathologic manifestation is a dilatation immediately inside the canal where the internal carotid passes into the skull cavity and that the main factor in the disturbance of the optic nerve is the relation of this dilatation to the optic chiasm. In regard to the second case, spasm of the retinal artery, the question comes up, he said, of whether or no there was cerebral arteriosclerosis. Of course, the examination of the eye is the best test of this, but the history of the case has to be taken into consideration. The fact that there may be arteriosclerosis confined to the cerebral vessels without general arteriosclerosis has been demonstrated. In one of Dr. McCarthy's patients who suffered with attacks of migraine, examination of the brain showed extensive arteriosclerosis with no general systemic trouble. Contraction of the retinal artery has been observed in attacks of migraine. Experiments have been performed of tying off vessels to vary pressure and it has been found that changes in tension give rise to localized arteriosclerosis. The migraine attacks might be sufficient to account for a localized arteriosclerosis in the retinal vessels.

CONSERVATISM IN THE TREATMENT OF INFANTS WITH HARELIP AND CLEFT PALATE.*

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The advent of an infant affected with deformity of lip or palate, or both, brings directly to the parents and physician in charge, the urgent necessity of deciding whether immediate or at least early radical operation for the correction of the deformity shall be performed, or methods of treatment adopted that will admit of postponement of palate closure until a later period.

With authorities openly divided on this question as they are, the decision must necessarily be a difficult one to determine, more especially since such cases are comparatively infrequent in the general practice of medicine and surgery.

Fig. 1.—Infant with harelip not associated with fissure of the hard palate, although there was cleft in the soft palate. In this case the usual order was reversed, staphylorrhaphy performed with perfect result and lip closed after strips had straightened the nose.

My practice being limited to this field and necessarily covering a somewhat extensive territory, the opportunity to observe both the effects of treatment according to my own system on infants under widely different, often extremely difficult conditions, and the result of operations by others in their influence on the appearance and development of patients in later life is such that I feel warranted in bringing forward for your consideration at this time certain facts bearing on conditions common to all such cases, with suggestions of individual variations from time to time noticeable to meet the exigencies of which my own system of treatment has been designed.

CLAIMS OF ADVOCATES OF EARLY OPERATION HARMFUL.

The following claims made by advocates of closure of palate in early infancy are not in accord with my own

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906. Part of the illustrations are omitted from THE JOURNAL, but appear in the reprints.

perience and the recorded results of many others in similar cases and appear to lead along lines that can not fail to be distinctly harmful if followed implicitly by operators generally for reasons that practical results have shown make clear. Writers favoring early operations hold that the most desirable time for operation is within three months after birth; that there is less nervous shock because the nervous system of the child is not well developed and the child is not capable of receiving the same impressions that it would later in life; that there is better reaction and less shock in young children because of less alarm and dread; that there is less deformity, for they claim all the tissues, bony as well as soft, develop naturally and according to accepted types; and that there is development such as will allow normal speech to follow when the child reaches speaking age.

ESTIMATE OF INFANT MORTALITY FROM EARLY OPERATION MISLEADING.

Any estimation of the mortality results of early operations on harelip and cleft palate infants must necessarily be misleading for large numbers of them do not live beyond the early periods of infancy. Many die from inanition in spite of good care and carefully

Fig. 2.—Same infant shown in Figure 1 after closure of both lip and palate.

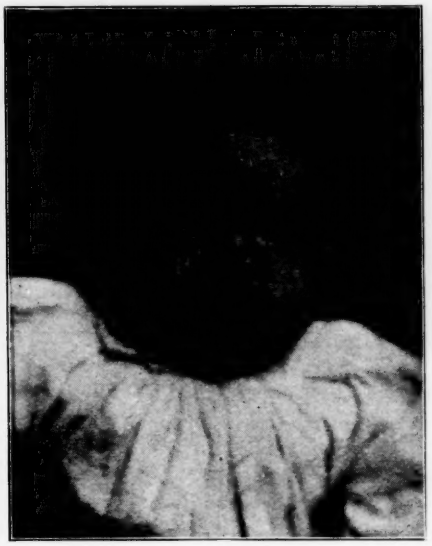

Fig. 7.*—Baby with single harelip showing more marked maxillary and nasal irregularity and with wider palate fissure than the previous illustrations.

Fig. 8.—Same child as in Figure 7 after operation.

selected nourishment, even though no surgical operation be attempted, and it is hardly reasonable to suppose the percentage of fatalities would be decreased by the addition of surgical operation in every case.

In the development of the human embryo there is coincident development of other parts at the stage which determines the form and character of lip and palate. Naturally, causes which may happen to be responsible for arrest of development in this particular region might also be expected to cause arrest of development in other parts of the individual. External evidence of this is frequently noted. Many infants placed under my care or brought to my notice have had more than the usual number of fingers or thumbs, or they have been totally deaf from birth or otherwise defective and this, as might be expected, is quite in accord with the results of investigation by Talbot and others along these lines. Internal defects manifest themselves in insufficient vitality or inability on the part of one or more of the organs of the body to perform natural function with sufficient energy to sustain life, and this entirely outside of the question of difficulty in taking nourishment which can be corrected by application of strips as well as operation and with more safety.

SUSCEPTIBILITY TO TOXEMIAS IN INFANCY.

The total deaths in Chicago during the year 1905 were 27,212; of these, 5,631 were under one year or about one-fourth of the whole number of deaths of all ages and from every cause. Does it seem reasonable that grave surgical operations during the first few weeks or even months would have reduced this number of infant deaths, considering that the number between one and five years was less than half as many, which in consideration of the larger number would reduce the proportion to approximately one-eighth? Does it not appeal to reason that there must be a vastly greater resistance to disease and injury of every kind after one year than previously?

This truth might be corroborated in many ways, but the following quotations seem to bear directly on the subject as to call for repetition. Christopher[1] says:

> At birth the child is a very incomplete human being. Its anatomic deficiencies are obvious. Its physiologic or chemic deficiencies are less obvious, but more important. Attention is often called to the crisis through which the child passes at birth when its heart changes from a three-chambered to a four-chambered organ. Yet this is trifling compared to the crisis which occurs when the first food enters the stomach and that organ suddenly assumes new functions; when products of the digestion reach the liver and that organ commences a series of new and untried chemical processes; when the products from this organ instead of those from the old practical and well-developed liver of the mother start on their way through the circulation to do good or harm.
>
> It would be absurd to suppose that the physiologic processes of the newborn baby are completely developed when the anatomic elements are so markedly deficient. We know positively that these processes are not the same as those of the adult. It is because of this incompleteness that autotoxemias occur and this also explains the greater frequency of autotoxemias in childhood than adult life and still greater frequency in infancy.

1. Christopher, W. S.: "Types of Children," THE JOURNAL A. M. A., vol. xliii, p. 1700.

In a summer's experience with infantile diarrhea, J. H. Knox[2] gives a table showing susceptibility of infants to dysentery from birth to 24 months and older. The average shows 14 or 18 cases during the first year to one at 24 months or older. The tabulation indicates emphatically the great susceptibility of children during the first year to invasion of dysentery bacillus. He states that after the first year the susceptibility to these

Fig. 11.—Boy four years old, double harelip with characteristic deformity by muscular action.

disorders is rapidly reduced, although exposure to the infection is probably as great.

ORDER OF CLOSING LIP AND PALATE WHEN BOTH ARE INVOLVED.

While it is undoubtedly true that with the lip fissure open operation may be more easily performed on the palate by one accustomed to operate in this field, the advantage is not of much importance as no serious difficulty is experienced in securing all the space necessary

Fig. 13.—Face of boy showing in front view result of imperfect early operation apparent in deformed nasal form, almost complete nasal stenosis, arrest of maxillary development, due to loss of premaxillary structures and anterior permanent teeth, upper lip too long and badly marked with deep scars, eyes staring on account of unnatural muscular tension.

2. Knox, J. H.: "A Summer's Experience with Infantile Dysentery," THE JOURNAL A. M. A., vol. xliii, p. 1849.

for rapid use of proper instruments in mouths of which the lip has been properly closed. On the other hand, the proper adjustment and fixation of the maxillary bones in their right relation, with additional value of better circulation for the nourishment of flaps secured by the closure of the lip borders and anterior portions of the palate, are by no means inconsiderable factors in leading to successful results when palate closure is performed.

PERMANENT DEFORMITIES OF FACE.

In addition to danger of early operations, serious permanent disfigurement of the nose and face is a matter of some moment, for interference with development of the teeth must affect the form of the maxillary bones and other osseous portions of the face, thus directly influencing the shape of the nares, the orbits and the palate. It is axiomatic then that violent injury of any kind in early infancy, even though for the good purpose of palate closure, should only be a *dernier ressort* and at best can not fail to exercise a very serious and deplorable ill effect on the appearance, the general health and the character of the voice of the individual so treated.

At the fifth week of embryonic life the germs of developing teeth have already begun to assume distinctive form and at birth both deciduous and permanent sets are far along toward development. That arrest of, or other interference, with development of the maxillary bones must interfere seriously with the regular process of eruption of these teeth in due form at the proper periods is generally admitted, but the relation of the proper arrangement of the successively erupting dental organs to the form of the face, the oral cavity, the nares, the orbits, as well as more indirectly on the development of the individual, is such as to demand most careful consideration before surgical disturbance is attempted. Development of the posterior portion of the palate in such cases through the new growth of the upper jaw back of the first molar tooth sometimes shows a tendency to proceed along normal lines, thus making an attempt to give proper width to the palate at the posterior portion of the hard palate; but the incisor cuspid and even bicuspid regions must of necessity suffer arrest of development in marked degree from the previous crushing in early infancy. This not only applies to those so treated for palate closure, but is evidenced in all persons who have suffered accidental injury before or during the period of eruption of the deciduous teeth. Any injury in fact that disarranges the occlusion of the growing, permanent teeth so that they are in lingual instead of buccal or labial occlusion with their antagonists in the lower jaw will have the same effect.

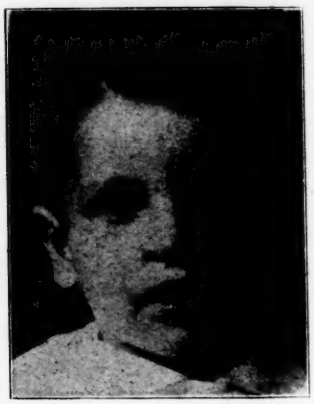

Fig. 12.—Same boy shown in Figure 11 after operations to bring pre-maxillary back to place, and lip closure. The teeth of this patient now form a very good upper arch.

NASAL STENOSIS.

Stenosis of the nares is also a vital matter in consideration of development. Those familiar with the various typical forms of palate fissure know that in a large proportion of these cases it is a physical impossibility to

close the cleft by immediate pressure of any kind without bringing the opposite side of at least one naris in absolute contact, and in any case the nasal opening must be very much narrowed on one or both sides.

The question of partial or complete stenosis of the nasal passages and the natural ill results of mouth-breathing concerns as every one knows, general as well as local development and general health besides, and even though partial nasal improvement may be expected as growth increases, there can never be a normal condition in that respect. The proof of this statement is at hand everywhere, for in otherwise normal individuals the relations of contracted dental arches and high palatal vaults to mouth breathing, enlarged turbinates, spurs, hypertrophic and atrophic rhinitis are too well understood and too apparent in daily rhinologic practice to admit of further question.

EFFECT ON SPEECH.

This leads to the final claim for better speech. Individuals affected by nasal catarrh do not have good speaking voices, nor do those who are mouth breathers with marked nasal obstruction, nor do those as a rule with contracted irregular dental arches and abnormally high contracted palates. Not only is this true because of the very considerable part borne in word and sound-making by those influences, but in such cases the larynx and vocal chords are very prone to affections which are not at all in the direction of the best speech or oral result. Even the development in form and character of the soft palate is not more assured than by later operation for the reason given in my previous writings on this subject that more perfect plastic work may be done by the surgeon in proportion as he may, with safety to his patient, be deliberate in his work, and effort to secure perfect coaptation of surfaces and exact muscular alignment of opposing muscles. Probably nowhere in the whole field of surgery is this more important than in staphylorrhaphy, for the chief battle at any age is so to control hemorrhage and other disadvantageous conditions which tend to increase the difficulty of operation in this necessarily somewhat awkward situation as to make accuracy practicable, notwithstanding the radical measures that are imperatively required to secure the best results.

A little study of the cases here represented and the range of temperature in spite of the great care given, before and after operation, as well as the comparative rapidity with which the operations were performed through the use of specially designed instruments, preparation of sutures and needles in advance, order in the use of instruments, systematic nurse and rapid handling of sponges with minimum amount of anesthetic, all conducive to the least possible shock and against unfavorable postoperative conditions, will give a better understanding how severely the vital forces of infants and even young children must be taxed to secure the ideal palate results that really mean benefit to speech. Further, it will become evident that had the infants on whom the lip operation only was performed been subjected to the more severe palate operation, the mortality record would certainly have been different and sadly disastrous.

Figure 15.

Figure 17.

Figure 19.

Fig. 15.—Front view after operation on lip for the purpose of shortening the lip, reattachment of the parts in more nearly normal relation and removal of scar tissue for same boy shown in Figures 13 and 14. Improvement in expression of eyes is due to correction of unnatural muscular action.

Fig. 17.—Side view of boy, four years, old, for whom operation was attempted at two months by other surgeons according to the plan of forcing the maxillary and palate bones together and closing palate at that early age by radical operation, at which time the lip was also closed. Nearly all one side of the lip sloughed away, and all the central portion of the palate except a narrow bridge of tissue that held the maxillary bones in unnatural position and gave the deformed appearance of excessive unilateral prominence which may be noted, with corresponding depression indicating lack of development of the other side of the face, and practically ruined his nose.

Fig. 19.—Infant of three months with single hare lip and wide fissure through both hard and soft palates.

METHOD OF TREATMENT DESCRIBED.

As described in my previous writing, strips are put on and a treatment outlined with a view to building the child up and putting in the best possible condition for operation. The simple procedure of placing a strip of zinc oxid adhesive plaster across the lip fissure, making it about the width of the upper lip, and extending sufficiently across the cheek from each side to give firm resistance when tightly drawn, accomplishes a number of useful purposes.

1. No mother should be allowed to suffer the shock of seeing her child almost inhuman in appearance when it can be made to look fairly well immediately with such a strip.

2. It prevents increase of deformity and further distortion of the face by unnatural muscular action.

3. In laughing and crying the principal force of muscular action is applied to the most prominent anterior portion of the maxillary bones. This, in double harelip and cleft palate, is on the projecting pre-maxillary, and tends to draw it backward. The effect is the same in single fissure, for this pressure comes on the almost invariably excessive development on one side that may be noted as a marked characteristic of all such cases as shown by the illustrations. With this as a point of resistance, the less developed maxillary on the opposite side is necessarily drawn forward, thus equalizing in greater or less degree the maxillary irregularity, and by this means tending to straighten the nose as well, while the general result of the muscular action is to make pressure in such manner as to bring the sides of the palate fissure nearer together, with consequent narrowing of the intervening fissures.

4. The infant becomes accustomed to tension in this region, and is less likely to fight and struggle to free the lip after operation, thus marking of the lip by sutures is much less likely to occur.

5. An infant learns to take nourishment much more naturally and easily with the lip thus placed in proper position.

6. He learns to breathe with the wide opening, that would otherwise exist, properly closed, thus avoiding the possibility of insufficient oxygenation after operation, when his air breathing space will be necessarily reduced, and the need of air more than ordinarily required to throw off the effect of the anesthetic.

Fig. 22.—Same baby as in Figures 19, 20 and 21, shows facial expression, correct muscular action and freedom from scar tissue at fourteen months.

If accustomed to nurse or use the bottle with nipple the child is allowed to continue to do this until marked improvement is noted by increase in weight, character of bowel passages, etc., afterward it is gradually taught to nourish with a spoon. The strips are changed from day to day, or as required, always with effort to make the tension greater as tolerance is acquired. Usually it takes from ten days to two weeks to get an infant properly prepared and the unequal division of the jaw corrected with the anterior portion of the palate fissure drawn back sufficiently to make operation practicable, though it is frequently advisable to wait until the infant is three or four months old in order to allow it to become strong and vigorous.

The lip is then closed and the palate closure deferred until some period between one and two years old, preferably about one year and six months. If at that age the child be strong and in good health the palate is closed throughout, but if otherwise, then the hard palate is closed and the velum allowed to remain until a little later, when having recovered from operative procedures, the little one may be expected to endure this final operation with safety, because treatment that has preceded it will have so greatly narrowed the soft palate opening as not only to make the act of closing a less serious and dangerous one, but it will also have improved the prospect of a full, flexible and useful palate after operation because of the decreased tension thus secured.

When the child is strong and well nourished and the palate fissure is confined to the velum, the order given may sometimes be reversed and the palate closed first; because with the hard palate united there is no opportunity to reduce its difficulties by earlier operation as described and there is not the same advantage acquired by the use of adhesive plaster strips as when both hard and soft palates are affected.

In the light of experience when successful surgical closure of cleft palate was at best a doubtful procedure, with the result much more uncertain than improved methods of operation have made it at the present time, such ill results as are shown in children now growing up who were subjected to the operation of crushing together the separated palate and maxillary bones for the purpose of closure of palate fissure in early infancy, seemed to be unavoidable in view of the choice between evils, but now that even the most difficult palate fissures can be closed at practically any age, jeopardization of young lives and the infliction of other deformities and disadvantages for the purpose of relieving the congenital one would seem to be quite unwarranted. Whenever possible, infants brought to the hospital, and especially those that come long distances, should be prepared for operation, not alone by careful examination of urine, feces and other usual methods of physical examination, but also by having them accustomed to change of food and surroundings until, by daily weighing, it may be found that there is a normal increase in weight.

Postoperative care begins with rectal injection of normal salt solution on or immediately after leaving the table. This is repeated at intervals of two or three hours with the addition of alternative substitution of nutriment, according to conditions and indications. A spoonful of warm water is given by mouth shortly after recovery from anesthetic. If no ill results follow this is repeated in larger quantity with gradual cooling and increase in quantity, then liquid nourishment is given that has already been found by previous care to be beneficial to the individual in charge.

Body temperature is sustained by external heat, especially hot-water bottle to the feet, and later temperature is regulated by cool sponging with alcohol and water, finishing with alcohol to cool fever, and young infants are rubbed with oil and wrapped in oil covering. Many infants seem to be benefited by giving modified milk soon after operation without the more gradual preparations that older children and persons seem to require. Great care is taken to stimulate the appetite, when, as sometimes occurs, there is lassitude with little or no desire for food. A drop or two of brandy in a spoonful of water every two hours, or with older children, carefully prepared chicken broth of concentrated strength or beef juice will often start the physiologic mechanism to more active work.

SUMMARY.

1. The first care should be to get the infant in the best physical condition for operation.

2. Delay until operation can be done with reasonable assurance of safety, but instead of allowing greater deformity to result from adverse muscular action during the waiting period as would otherwise be the case, to utilize these forces, to reduce the fissures and correct the asymmetrical condition as much as possible, thereby simplifying the operative requirements and assuring better results.

3. Subdivide the operative steps required for complete correction of the existing deformity in such manner as to make sure of the accomplishment of each essential portion with the greatest possible avoidance of shock and with accurate adjustment of the parts.

4. A series of comparatively slight operations (not more than three to complete lip and palate) with sufficient intervals between them are less dangerous to the life of the little patient and undoubtedly tend to a highe raverage of perfect results than more radical measures.

5. Get back into the circulation such fluid as may have been lost through hemorrhage as soon as possible by the aid of normal salt solution and nutrient liquids.

6. Give the least possible amount of anesthetic consistent with avoidance of actual pain, and reduce length of time of each operation to the minimum by order in the use of specially fitted instruments and the rapid use of dry sponges.

7. Convert difficult cases with palate fissures of unusual width into better operative form by mechanical and other means before final closure is attempted.

8. Get the alimentary tract in order by cleaning thoroughly, by keeping the bowels open and by the administration of nourishing liquid food *per rectum*. As soon as the stomach will bear it without exciting vomiting administer food by mouth and when appetite is poor stimulate with carefully flavored, nourishing food in concentrated form.

9. Avoid the use of dangerous germicidal agents and depend chiefly on scrubbing and alcohol to cleanse the mucous membrane surface preparatory to operation. Use applicators dipped in dioxogen to cleanse the palate surface in postoperative care.

10. Watch respiration after operation to see that with the breathing space closed in an unaccustomed manner, there is sufficient oxygenation.

11. Aim to avoid periods of stress and give sufficient intervals for recovery between operations and yet have both lips, hard and soft palate complete, before speech habits have an opportunity to become fixed.

[For Discussion, see Page 826.]

THE ISCHEMIC PARALYSIS AND CONTRACTURE OF VOLKMANN.*

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The immediate and remote effects of overtight fracture dressings on the muscles of the extremities, essentially a myositis, were first made known by Richard Volkmann[1] in 1875. Volkmann reported but one case of which we have knowledge. This was in the lower extremity and is one of two cases cited here, the remaining fifty of the fifty-two cases described in this paper involving the upper extremity. Further, Volkmann's patient was practically an adult, his age being 16 years, and, as will be shown below, the lesion which is known by Volkmann's name is pre-eminently one of childhood, the great majority of patients being between the ages of 3 and 12, while in turn the greater number of these were between the ages of 5 and 10.

In 1884 Leser[2] published a short monograph on the subject, reporting no less than seven clinical cases. He also investigated the matter experimentally by studying the effects of tight bandaging on the limbs of animals. While he did not succeed in bringing out the type of affection known to us to-day, his work is sufficiently important to entitle him to share credit with Volkmann, and many German authorities designate the affection as the Volkmann-Leser paralysis and contracture. The description of the condition as generally set forth is based largely on Leser's work. This author appears to have taken little thought of the possibilities of operative treatment. His patients were not subjected to any surgical measures (save one in whom a pseudoarthrosis was incidentally corrected), and he seems only to have suggested that something might be accomplished by forcible stretching of the paralyzed and contractured flexors under general anesthesia.

Isolated cases were reported by Sonnenkalb[3] (1885), Petersen[4] (1888), Niessen[5] (1890); two cases), Hildebrand[6] (1890), Davidsohn[7] (1891) and Pingel[8] (1892; two cases). In 1893 Keferstein[9] published a monograph on the subject, adding no less than seven hitherto unreported cases.

During the decade which followed the appearance of Leser's monograph it had become apparent, first, that the Volkmann-Leser type of ischemic muscular paralysis due to overtight fracture dressings did not differ essentially from the ischemic lesions resulting from embolism and thrombosis and from cold; and, second, that pressure lesions might arise from nerve compression—especially after the use of the Esmarch bandage—which bore no relation whatever to the typical Volkmann-Leser affection, the latter being particularly myogenic in origin and in no wise influenced by injury of the nerve trunks. It was shown that injury from nerve compression led to a flaccid type of paralysis, which differed radically from the myogenic form. But little advance in treatment was made during this period. Leser's suggestion to use forcible stretching of the flexors under general anesthesia seems to have been utilized. In Davidsohn's case, reported in 1891, the flexors were lengthened. This appears to have been the first attempt to relieve the condition by a cutting operation, but this must have been thought of minor importance, for in the cases collected by Keferstein in 1893 we find no mention of surgical intervention proper.

In 1896 Henle[10] reported a case in the practice of his chief, Mikulicz, in which the forearm bones were resected with good effect. It is rather strange to note that at the time when German reports of these cases cease a series of English observations began with a case reported by Battle[11] in 1896. While the English surgeons were aware of Volkmann's pioneer study in 1875, and while they made use of his name in describing the peculiar state of affairs which follows the application of overtight dressings for fractures, they appear to have been ignorant of the work of Volkmann's successors; we nowhere find mention of the important monographs of Leser and Keferstein, nor, indeed, of any other German reporters.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Volkmann: Krankheiten d. Bewegungsorgane, Pitha-Billroth. Handbuch d. Chir., vol. ii, No. 2, p. 846.
2. Leser: Volkmann's Samml. klin. Vortr., 1884, No. 245.
3. Sonnenkalb: Deutsch. med. Wochft., 1885, No. 17, p. 273.
4. Petersen: Arch. f. klin. Chir., 1888, vol. xxx, No. 7, p. 675.
5. Niessen: Deutsch. med. Wochft., 1890, No. 35, p. 786.
6. Hildebrand: Deutsch., Zeitsch. f. Chir., 1890, vol. xxx, p. 98.
7. Davidsohn: Inaug. Diss., Erlangen, 1891.
8. Pingel: Inaug. Diss. Greifswald, 1892.
9. Keferstein: Inaug. Diss., Göttingen, 1893.
10. Henle: Centrbl. f. Chir., 1896, No. 19.
11. Battle: Trans. Clin. Soc., London, 1896, vol. xxix, p. 249.

The English surgeons seem to have taken cognizance chiefly of the deformity which results from the condition. Their writings deal principally with an orthopedic lesion in which the causation plays a minor part in the prognosis and treatment.

Battle's pioneer British case in 1896 was soon followed by others: Dunn[12] (1897), Johnson[13] (1898), Davies-Colley[14] (1898; two cases), Owen[15] (1898), Clarke[16] (1899), Page[17] (1900), Littlewood[18] (1900; two cases), Wallis[19] (1901), Barnard[20] (1901; two cases). In studying these reports we are struck with the fact that the British surgeons were chiefly concerned with a deformity which they sought to correct by orthopedic methods. The cases came to light because such methods were employed to remedy certain deformities and disabilities, the causation of which was mentioned only incidentally. Dudgeon,[21] in 1902, was at pains to collect the scattered observations. He tabulated these, adding hitherto unpublished observations which dated back to a period at which no surgical intervention was practiced. In the following year[22] (1903) he reported three additional cases.

Fig. 1.—Ischemic paralysis of Volkmann. Condition at end of five months.

During the same year (1903) Edington,[23] of Glasgow, reported three Scotch cases, and in 1905[24] Rowlands wrote a short monographic article on the subject. This was based on Dudgeon's study, to which was added a personal case.

The only articles which I am able to find in American literature are those of Bernays[25] (1900) and Ferguson[26] (1906). The former called attention in a forcible way to the importance of the subject. The latter reports the result of two observations in which lengthening of the flexor tendons of the forearm was followed by marked improvement.

My personal contribution to the subject is as follows:

12. Dunn: Guy's Hosp. Gaz., 1897, vol. xi, p. 11.
13. Johnson: Lancet, 1898, No. 1, p. 722.
14. Davies-Colley: Guy's Hosp. Gaz., 1898, 15.
15. Owen: Ibid.
16. Clarke: Orthopedic Surgery, 1899, p. 49.
17. Page: Lancet, 1900, No. 1, p. 83.
18. Littlewood: Ibid., p. 291.
19. Wallis: Practitioner, 1901.
20. Barnard: Lancet, 1901, No. 1, p. 1138.
21. Dudgeon: Lancet, 1902, No. 1, p. 78.
22. Dudgeon: Trans. Clin. Soc., London, 1903, vol. xxxvi, p. 251.
23. Edington: Glasgow Med. Jour., 1903, vol. lix, p. 417.
24. Rowlands: Lancet, 1905, No. 2, p. 1168.
25. Bernays: Boston Med. and Surg. Jour., vol. cxlii, p. 539.
26. Ferguson: Ann. of Surgery, vol. xliii, p. 599.

CASE 1.—X., male, aged 17, a miner by occupation, came under my observation Aug. 16, 1905, with the following history:

History.—Family and personal history were negative. On Aug. 7, 1905, nine days before I saw him, he received, while in Mexico, a stab wound at the upper outer side of the right forearm. The wound bled freely. He was taken to a hospital and an Esmarch bandage was applied with a fair degree of snugness from the wrist to the shoulder. This bandage remained in place from 9 a. m. until 10 a. m. on the following day. There was a moderate degree of pain in the hand and forearm but this pain was not excessive; the hand underwent moderate swelling. On removal of the Esmarch bandage an operation was performed under an anesthetic. The nature of the operation is unknown. On recovering from the anesthetic the patient found the forearm in anterior and posterior splints and enveloped in dressings held in place by an ordinary bandage rather snugly applied; a considerable degree of pain in the forearm and hand followed. The splints were left in place for three or four days. On their removal blebs were found in several places on the forearm, wrist and hand; there was moderate swelling in the hand and he was unable to move the fingers; he does not remember whether or not there was sensation in the fingers and hand. After the removal of the dressing the forearm swelled rapidly and became painful. During the last three or four days the swelling has gone down and the pain has markedly diminished.

Examination.—Aug. 16, 1905. The young man was up and about. He looked and felt well. His temperature and pulse were normal. He had a good appetite. He carried the right forearm in a sling. This forearm was the seat of a short, recent, healed wound on the antero external aspect a hand's breadth below the elbow. The forearm was about the size of its fellow. The hand was a little swollen and there was complete paralysis of all muscles below the elbow. The patient could not move the fingers or wrist in the slightest degree; there was complete anesthesia below a point a little below the elbow. There was no electrical reaction whatever in any of the muscles of the forearm or hand to either the faradic or galvanic current; a radial pulse was present.

Diagnosis.—Ischemic paralysis with coexisting pressure neuritis. Very gentle massage and a mild faradic current were advised.

Course of the Disease.—During the next few days the fingers showed a tendency to contract. They were extended and the forearm and hand were loosely bandaged to a light posterior splint. The only improvement which took place was a gradual return of sensation in the forearm.

Under date of Jan. 5, 1906, I find the following notes: "Patient seen to-day with Dr. Edward Delehanty; he has had massage and electricity to the forearm and hand constantly, but there is not the slightest return of motion; sensation has returned to a point a little above the wrist. Flexion and extension at the elbow are normal but there is less power than on the opposite side; the fingers and wrists can be moved passively, this has been done daily; passive pronation and supination of the forearm are possible to but a very slight degree. The forearm is smaller than its fellow, it is rather rounded; its muscles, especially those on the anterior surface, are hard and board-like; there is complete loss of electrical reaction both to the faradic and galvanic current in all muscles of the forearm and hand. Measurements of the circumference of the two limbs are as follows: two inches above the styloid process of the radius the right side measures 5¾ inches, the left side 6¼; five inches above the styloid process the right side measures 7 inches, the left side 8½; at the junction of the upper and middle thirds of the forearm the right side measures 8¼ inches, the left side 9½; at the middle of the arm the right sides measures 8½ inches, the left side 9¼. The hand is shiny but not swollen; the hand and fingers have been on a posterior splint and are in complete extension. I am impressed by the hard, board-like rigidity of the forearm muscles. It seems to me probable that a fibrosis locks the forearm bones, thus preventing passive pronation and supination. No operation seems indicated" (Fig. 1 represents the arm at this time.).

I examined the patient again Feb. 2, 1906. There was no change. He left the hospital of his own accord about April first, after six months' residence. During this time he had had constant attention. There was no improvement whatever at the time of his discharge. No muscles of the forearm or hand responded to any electrical current. A bad prognosis was necessarily given. Contracture would doubtless have gone on in this case had not the limb been placed on a splint when it commenced.

Note, December, 1906.—This patient re-entered the hospital in the service of one of my colleagues. Since I last saw him the forearm has become smaller and harder, the fingers are markedly contracted. The hand is a claw-hand. He has little motion at the wrist, a trifle of motion in the thumb, practically no motion in the fingers. The picture is a classic one. At the hands of the surgeon whose service he entered he was subjected to an operation in which an attempt was made to free the median and ulnar nerves. Both nerves seemed thickened; below the elbow they were buried in the dense tissue of the forearm. An excellent opportunity was afforded to examine the forearm muscles themselves. They are hard and fibroid, muscle tissue is replaced by a fibrosis. Sections were taken from these muscles and handed to Dr. J. A. Wilder, professor of pathology in the University of Denver, for microscopic examination. Dr. Wilder reports as follows:

"*Examination of Muscular Tissue.*—The tissue is pale red in color and very tough and fibrous. Part of the tissue was fixed in formalin, part in Marchi's fluid; imbedded in celloidin. Histologic examination of the sections shows a great hyperplasia of connective tissue around and between the bundles of muscular fibers and in some areas between the individual fibers as well. This connective tissue is dense and consists chiefly of many adult fibers containing a moderate number of blood vessels, most of which have well developed walls. This fibrosis is so prominent that in many fields muscular tissue is not present, and where found it appears atrophic and fragmented. Many of the fibers have lost their nuclei and transverse striations, having the appearance somewhat of broad ribbons of delicate fibrillar tissue. Other muscular fibers, and parts of fibers have a glassy, homogenous appearance with a marked affinity for the acid stains, their appearance and reactions being strongly suggestive of hyaline degeneration.

"Osmic acid preparations show a moderate amount of fatty infiltration, which is more marked between the connective tissue fibers than between the muscular fibers. Fatty degeneration of the muscular fibers is not found."

Feb. 13, 1907: Since the operation in December sensation in the hand has improved somewhat, but motion of the fingers has not improved.

ANALYSIS OF TABULATED CASES.

Age.—While in a few cases the exact age is not stated, there is reason to think that in at least 40 out of 52 instances the patients were between 3 and 12 years of age. Over one-half of these were from 5 to 10 years of age. Of the few remaining adult cases no patient was over 35.

Sex.—When sex is mentioned we find males 34, females 11. In the English series the sexes are about equally represented. Nearly all the German patients were males.

Location.—Of 52 cases all but 2 were seated in the upper extremity. The arm proper (including the elbow joint) and the forearm were involved in about an equal degree. Lesions of the upper arm were limited invariably to the lower third. It would seem that in the majority of the forearm cases the lesion was near the middle; both bones were usually involved. In the minority of cases the lesion was seated in the upper or lower third of the forearm.

Character of Injury.—In the vast majority of cases this was a fracture.

General Results Independent of Treatment.—It is difficult to determine this. Of 51 cases in which the result is stated we find complete failure in 10, some improvement in 14, and a relatively good result in 27. The latter implies more or less return of function. Even in cases with a naturally poor prognosis time often accomplishes much. In but few cases is the end-result noted.

General Results as Based on Treatment.—Operative procedures in the main are limited to cutting operations —tendon lengthening, resection of bone, and, in a few cases, tenotomy (the two lower-limb cases) and the resetting of badly healed fractures. In 22 cases treated by operative procedure a good functional result seems to have been secured in the majority. In 30 non-operative cases (simple tendon stretching being placed here) good results were secured in a minority only, and in several of these improvement was only apparent after many years of observation.

This analysis is of limited value, since it takes cognizance only of certain data common to individual reports, many of which are very defective. It covers the personnel of the patients, site and character of lesion, dressings, interval before operation when the latter was performed, character of operation and general results. It is necessarily far from exhaustive.

Lorenz,[27] who considers the general topic of muscle-ischemia, calls attention to those especial types which are due to arterial diseases (trauma, embolism, thrombosis, etc.) and to cold. These will be briefly reviewed in another place. It is sufficient to state that in ischemia of the muscles due to any of these causes the symptoms and sequelæ are the same. Clinical confusion is hardly possible if we bear in mind that the true Volkmann type results purely from over-tight dressings.

The clinical features of the latter type are given by Lorenz as follows: Soon after application of splints and dressings great pain develops, with swelling of the free portion of the extremity (the great majority of cases described concern the upper extremity only). The pains increase progressively, and if the bandage is not speedily removed the muscles soon become board-like and rigid. At the same time a moderate degree of contracture sets in. The limb is now paralyzed and the muscles are very sensitive. Sometimes paresthesiæ appear. A few hours after removal of the bandages the muscles swell, indicating the development of myositis. In two or three days the swelling subsides, with gradual cicatricial contracture of the muscles. This may lead to permanent shortening. Volkmann saw high degrees of permanent contracture (nails boring into palms). However, contractures do not invariably follow. There is a natural tendency to gangrene, with the cutaneous symptoms which precede the latter (coldness, insensitiveness, subsidence of original pain, bluish-gray skin, bullæ, etc.)

If the muscles are injured to a certain degree destruction of them results. To save the muscle in its entirety the cause must be removed within 5 hours, for in about 7 hours the rigidity of the muscles already described supervenes. This rigidity corresponds throughout to rigor mortis, and when it is once developed the muscle is lost, although it need not become definitely gangrenous. Regeneration can not occur unless the circulation can be promptly restored. The muscle, if it can not undergo some degree of regeneration, must atrophy with the production of cicatricial contracture.

27. Lorenz: "Die Muskelnkrankungen," Nothnagel's Handb. d. sp. Pathol. u. Ther., 1898.

TABLE OF CASES—A—GERMAN CASES. **

No.	Reporter.	Age Sex	Injury.	Dressings.	Interval before Treatment.	Treatment and Results.
1.	VOLKMANN ..... 1875.	M. 16.	No injury. Hydrarthrosis of knee.	Posterior wooden splint.		Non-operative. Slow recovery from equino-varus deformity.
2.	LESER ..... 1884.	F. *	Contusion of upper arm.	Plaster-of-Paris, arm flexed.		Non-operative. Slight improvement from medical measures.
3.	LESER ..... 1884.	M. *	Fracture left upper arm, lower third.	Plaster-of-Paris, arm flexed.		Non-operative. Passive motion and splints. Some benefit.
4.	LESER ..... 1884.	M. *	Fracture right humerus, close above condyles.	Plaster-of-Paris, for 8 days.		Non-operative. Slight improvement.
5.	LESER ..... 1884.	M. —	Fracture of humerus into elbow joint.	Plaster-of-Paris for 14 days.		Non-operative. Very slight improvement.
6.	LESER ..... 1884.	M. —	Fracture of forearm in middle.	Plaster-of-Paris for short time.		Non-operative. Ultimate recovery.
7.	LESER ..... 1884.	M. †	Fracture of forearm in middle.	Plaster-of-Paris for weeks.	Fourteen weeks (?)	Operative treatment of false joint resulting from fracture. Essential improvement.
8.	LESER ..... 1884.	M. †	Typical fracture of radius.	Plaster-of-Paris for 5 weeks.		Non-operative. Almost complete recovery.
9.	SONNENKALB .... 1885.	M. 25.	Fracture in middle of forearm.	Splints.		Non-operative. Deformity remains. Some use of hand.
10.	PETERSEN..... 1888.	M. 4½	Compound fracture of humerus.			Flexors repeatedly stretched under narcosis. Some improvement. Complicated by traumatic obliteration of brachial artery.
11.	HILDEBRAND .... 1890.	F. 5.	Fracture of lower third of radius.	Anterior splint.		The badly united fracture was refractured. Later forcible stretching of fingers. Four years later recovery perfect.
12.	NIESSEN ..... 1890.	M. 10.	Diastasis of lower epiphysis of humerus.	Volkmann's splint, removed 3 days later.		Non-operative. Some improvement.
13.	NIESSEN ..... 1890.	F. 34.	Fracture of styloid process of left radius.	Plaster-of-Paris, followed by two splints for 6 weeks.		Non-operative. Recovered use of hand.
14.	DAVIDSOHN..... (Hinecke) 1891.	M. 12.	Fracture of right forearm, lower third.	Splints for several weeks.		Lengthening of flexor tendons. Good use of hand.
15.	PINGEL..... 1892.	M. 10.	Probable fracture of humerus into elbow joint.	Plaster-of-Paris; later splints.		Non-operative, but slight improvement.
16.	PINGEL ..... 1892.	M. 6.	Fracture of left humerus near elbow.	Plaster-of-Paris, removed next day.		Non-operative. No improvement.
17.	KEFERSTEIN ..... 1893.	M. 25.	Contusion of right forearm.	Splints.		Stretching of flexors under narcosis. Good use of hand.
18.	KEFERSTEIN .... 1893.	M. 6½.	Supracondyloid fracture of humerus.	Pasteboard splints, removed in 5 days.		Stretching of flexors under narcosis and use of splints. Withdrew from treatment. No improvement.
19.	KEFERSTEIN ..... 1893.	M. 8.	Supracondyloid fracture of humerus.	Plaster-of-Paris followed by splints for 2 weeks.		Non-operative. Recovered use of hand, with deformity.
20.	KEFERSTEIN ..... 1893.	M. 9.	Fracture of humerus into elbow joint.	Splints loosened on second day.		Non-operative. Withdrew from observation.
21.	KEFERSTEIN ..... 1893.	M. 5.	Fracture at elbow joint.	Plaster-of-Paris 4 weeks.		Stretching of flexors under narcosis, followed by passive movements. Was improving when lost sight of.
22.	KEFERSTEIN ..... 1893.	M. 10.	Fracture of both bones of forearm.	Splints.		Forcible stretching of flexors. No improvement, but 16 years later had good use of hand, despite deformity.
23.	KEFERSTEIN ..... 1893.	M. 9.	Fracture of middle third of right radius.	Anterior and posterior splints, taken off in 48 hours.		Forcible stretching under narcosis. Twelve years later, deformity persists. Has use of hand.
24.	HENLE ..... (Mikulicz) 1896.	M. 9.	Fracture of right forearm.	Plaster-of-Paris followed by splints until consolidation.		Resection of 1.5 cm. from radius and ulna. Wires tore through. Good use of hand.
25.	LYCKLAMA§ Á NIJEHOLT, 1904.	M. 7.	Fracture of left arm.	Plaster-of-Paris.		Non-operative. Excellent functional results.

** I am indebted to Dr. Edward Preble for valuable aid in the preparation of this paper.
§ Lycklama á Nijeholt: Nederlandische Tydschrift, 1904, vol. xl, p. 1070.

TABLE OF CASES—B—ENGLISH AND AMERICAN CASES.

No.	Reporter.	Age Sex	Injury.	Dressings.	Interval before Operative Treatment.	Treatment and Results.
26.	DUNN ..... 1897.	M. 12.	Fracture of both bones of forearm.	Splints removed at end of week.	Ten months.	Untreated. Prognosis bad. Extensive sloughing. Nerves involved in scar.
27.	R. JOHNSON..... 1898.	M. 8.	Fracture of lower extremity of humerus.	Wooden splints.		Excision of small pieces of bone at middle of radius and ulnar. Only fibrous union. Has to wear splint.
28.	DAVIES-COLLEY. . 1898.	F. 6.	Fracture of bones about elbow joint.		About two years.	Forcible stretching under narcosis. Flexors cut or torn in two. Extension splints. Hand in good position, but no power to flex.
29.	DAVIES-COLLEY. . 1898.	M. ‡	Compound fracture of tibia and fibula.		About two years.	Resulting equino-varus relieved by tenotomy of Achilles and flexors. Calf muscles originally injured. Healing after prolonged suppuration
30.	E. OWEN..... 1898.	*	Fracture of upper part of forearm.			Tenotomy of flexors. Result unsatisfactory.
31.	J. J. CLARKE..... 1899.	M. 6.	Fracture of lower end of humerus.	Splints.	Some months.	Tenotomy of flexors. Deformity overcome. No mention of function.
32.	H. W. PAGE..... 1900.	M. 4½.	Fracture of lower end of humerus.	Anterior and posterior splints in flexed position.	About six weeks.	Lengthening of flexor tendons; all united being those of index. Good use of hand.
33.	LITTLEWOOD .... 1900.	F. 8.	Diastasis of lower epiphysis of humerus.	Internal rectangular splints.	Four months.	Lengthening of flexor tendons. Good use of hand.

* Child. † Adult. ‡ Boy.

TABLE OF CASES — B—ENGLISH AND AMERICAN CASES—*Continued.*

No.	Reporter.	Age Sex	Injury.	Dressings.	Interval before Operative Treatment.	Treatment and Results.
34.	LITTLEWOOD .... 1900.	F. 6.	Fracture of lower end of humerus, radius and ulna.	Splint.	Seven months.	Lengthening of flexor tendons except flexor carpi ulnaris. Deformity corrected. Some power of flexion. Prognosis good.
35.	H. L. BARNARD.. 1901.	F. 3.	Fracture of radius and ulna about middle of shaft.	Anterior and posterior splints.	Nine months.	Lengthening of flexor tendons with use of extension splint. No mention of result. Prognosis good.
36.	H. L. BARNARD.. 1901.	M. 4.	Severe contusion of upper part of forearm.	External angular splint.	Five months.	Pronator quadratus separated from ulnar attachment; Arm supinated and fixed in splint. Prognosis good.
37.	F. C. WALLIS.... 1901.	F. 20.	Congenital absence of superior radius ulnar articulation. Operative fracture of lower third of ulna.	Splints.	One year.	Lengthening of flexor tendons. Good use of hand. Esmarch's bandage used in operation, but lesion was of Volkmann type.
38.	W. H. BATTLE.... 1896.	M. 12.	Fracture of forearm.	Anterior and posterior splints.		Attempt to lengthen tendons failed. Non-operative treatment with some benefit.
39.	DUDGEON ..... (Case of Clutton) 1902.	F. 5.	Fracture of humerus just above elbow.	Anterior and posterior splints.		Non-operative. Result very bad.
40.	DUDGEON ..... (Case of Pitts) 1902.	M. 20.	Unknown.	Anterior splint for 5 weeks. Plaster-of-Paris.		Non-operative. Very slow improvement under massage, etc. Deformity, but good use of hand.
41.	DUDGEON ..... (Case of Pitts) 1902.	M. 5.	Greenstick fracture of right radius and ulna at junction of middle and lower thirds.	Anterior and posterior splints.		Non-operative. Gradual improvement under massage and voluntary motion. No deformity and good use of hand.
42.	DUDGEON ..... (Case of Clutton) 1902.	F. 4.	Fracture of lower end of right humerus.	Plaster splints.		Non-operative. Gradual improvement under massage, etc. Deformity. Some use of hand.
43.	DUDGEON ..... 1903.	— 5.	Fracture of right upper arm, near elbow joint.	Plaster splints, arm flexed; removed 4 days later.		Non-operative. Very slight improvement.
44.	DUDGEON ..... 1903.	M. 9.	Fracture of left forearm.	Anterior and posterior splints for 3 weeks.	Two and one-half years.	Resection of from ½ to ¾ inches from both bones of forearm, posterior aspect middle third. Bones wired. Great improvement. Several earlier operations, nature and date not stated, had failed to give relief.
45.	DUDGEON ..... 1903.	M. 8.	Fracture of left forearm.	Anterior and posterior splints for 5 weeks.	One year.	Resection of ¾ inches from radius and ulna. Ends wired. Great improvement.
46.	EDINGTON ..... 1903.	F. 4.	Backward dislocation of right elbow.	Poroplastic splint for 3 weeks.	Three months.	Tendon lengthening. Results excellent.
47.	EDINGTON ..... 1903.	F. 7.	Fracture of left forearm between middle and lower thirds.	Anterior and posterior splints for 6 weeks.	Three months.	Tendon lengthening. Slight improvement.
48.	EDINGTON ..... 1903.	F. 32.	Septic process in right forearm when 15 years old.	Posterior splints, after multiple incisions.		Non-operative. Permanent deformity and disuse.
49.	ROWLANDS ..... 1905.	F. 6.	Fracture of middle of radius and ulna.	Splints removed 3 days later.	Four months.	Resection of radius and ulna, ¾ in. of each at different levels. Bones wired, position of hand corrected. Slight deformity. Good use of hand.
50.	POWERS ..... 1906.	M. 19.	Wound of soft parts of upper, outer portion of right forearm. Some unknown operation done.	Splints, left in place 3 or 4 days.		Non-operative. Prognosis bad. Esmarch's bandage was used in this case, but condition was evidently due to splints. See history.
51.	FERGUSON ..... 1906.	M. 9.	Friction of both bones of right forearm 4 years before.	Tight splints.	Four months.	Tendon lengthening. Marked improvement
52.	FERGUSON ..... 1906.	F. 12.	Fracture of left humerus at lower and middle thirds.	Tight splints.	Ten weeks.	Tendon lengthening.

When the injury and its results are slight or moderate, time and proper treatment will accomplish much. Complete restoration of function is not unknown.

In 1902 Dudgeon[21] attempted to collect the recorded material, but of the 15 or more cases which he gathered practically all had occurred in the practice of English surgeons in recent years; most of these saw the light as orthopedic cases (it is significant that the English write of Volkmann's contracture, not of Volkmann's paralysis). In addition to collecting cases, Dudgeon discussed the condition systematically and with especial reference to treatment. Quite recently Rowlands has brought the subject to date, making free and acknowledged use of Dudgeon's paper. As these authors seem unfamiliar with the later German work, what they say of the condition under discussion may be reproduced, their views being founded chiefly on the analysis of the English cases.

Dudgeon defines Volkmann's contracture as a contraction of the fingers and sometimes of the wrist which comes on rapidly with loss of power. . . usually about the elbow joint and chiefly in young children. In all cases, save a simple instance of thrombosis, splints had been applied for a fracture. In 14 out of 19 cases the splints caused sloughing. The dressings were not necessarily applied too tightly at first, but no allowance was made for swelling. Few patients complained of constriction, which shows that one can not depend on pain as a necessary symptom of over-tightness.

Esmarch's bandage has been applied in some cases, but in all of these it was followed by splints. In nearly one-half the cases there was a fracture or diastasis at the lower end of the humerus, which leads to the suspicion that in some instances the brachial artery may have been compressed between the splint and the lower end of the shaft of the bone.

Surgeons who have had an opportunity to see the muscles agree that these are firm, pale and fibroid. While histologic confirmation is lacking it seems safe to assume that the lesions of the muscles are not secondary to those of the nerves. The electrical reactions of the latter are generally normal. The contractured muscles, when they retain power of voluntary motion, do not give the electric reaction of degeneration; when the tendons of the contractured muscles are lengthened the power of voluntary motion becomes apparent. When Rowlands states that paralysis of the muscles does not appear, thereby indicating absence of injury to the nerves, he evidently refers to flaccid paralysis and not to mere loss of function.

It is known that primary lesions of both muscles and nerves may co-exist, and it has happened that the latter have been found imbedded in scar tissue.

Rowlands conjectures what had already been proven by Germans, viz., that the fibroid condition of the muscle is the result of a myositis. It is evident that the entire muscle is not always involved, otherwise regeneration would be impossible. Inflammation comes about as the result of the removal of the tight dressings, the blood thereby being allowed to congest the muscles. In nearly all cases enough damage befalls the muscles to prohibit perfect recovery.

The diagnosis of a recent Volkmann's contracture is unmistakable from the history of the case. Paralysis and contracture set in simultaneously; electrical muscular reactions are generally lost. Late ulnar paralysis may be simulated in old cases. The latter may be differentiated by the loss of use, wasting, and lost electrical reaction of the small muscles of the hand (except those of the thenar eminence and the two outer lumbricales). Further, in ulnar paralysis the wrist is not flexed, and there may be sensory and trophic disturbances in the skin supplied by the ulnar nerve. Other nerve paralyses—median, musculo-spiral, cerebral and spinal—can hardly be confounded with the Volkmann's contracture. The latter, however, has been simulated in hysterical patients.

In cases in which there is but little contracture the English authors employ massage and passive motion—if necessary, for two years. Galvanism is not recommended. Operative treatment must be instituted early, as it is of no service in old cases nor in any case in which the contracture is of high degree. Passive motion under an anesthetic, as originally recommended by Volkmann, has been found worthless by the English.

OPERATIVE TREATMENT.

Operative treatment comprises tendon lengthening and resection of the bone. The former has been well tested by Littlewood, Page and Barnard. Tendon splitting with suture was the method employed. The results were very good, although inherent difficulties are present, viz., slenderness of the tendons in young patients and the number of tendons which may need to be lengthened. Non-union or the joining of wrong segments may result.

Resection of bone seems a preferable operation. This was first done in England by Raymond Johnson, portions of the radius and ulnar being removed. This takes less time than tendon lengthening. There is no likelihood of injuring nerve trunks as there is in the latter operation. In certain instances—I believe this possible in the case which I report—the patient may ultimately demand amputation of the limb.

Prognosis is much better than Volkmann believed, but not as favorable as it was thought by Anderson. While benefit is possible by non-operative treatment, the majority of cases demand operative intervention. The prolonged management by massage, passive motion, active exercise, etc., so warmly recommended by Anderson ten years ago, is indicated after operation as well as in non-operative cases, and the proper combination of the two methods should insure the best possible result.

That paralysis following the constriction caused by Esmarch's bandage is entirely different from the Volkmann lesion was conclusively shown by von Frey[28] in 1894. This author states that the Volkmann—or as he prefers to call it, the Volkmann-Leser—type of injury presents a sharply characterized picture. The hand and fingers swell; violent, increasing pains are felt, involving the entire limb; the latter feels "asleep," and the fingers are numb. Swelling and pain increase and the condition often leads to removal of the dressings. If this has not been thought necessary, contractures of the hand and fingers begin to appear. About 24 hours after application of the dressings the limb becomes rigid. Voluntary movements are impossible, while passive motion causes intense pain. On removal of the dressings the limb suddenly swells—the previously bandaged area undergoes a sudden and severe swelling which reaches its acme in about 48 hours. It then gradually subsides, contracture appearing. In moderate degrees of injury there is a certain amount of flexion contracture and the patient can not move the hand or fingers. Nerve conduction is shown to be unbroken, although the strongest faradic current fails to contract the muscles, and only weak contractions are produced by galvanism. The condition may be exactly reproduced in animals by bandaging.

To this picture, which is reproduced at the expense of repetition for purposes of comparison, may be contrasted that which has been known to follow the application of Esmarch's bandage. Here the muscles are flaccid, there is no trace of contracture and no inflammatory reaction sets in after removal of the dressings. Soon after the appearance of paralysis the electrical reactions of the muscles are found to be normal (this is important), but the electric excitability of the nerve trunks is depressed and sensibility is lowered. Plainly, then, Esmarch's bandage has caused some interference with innervation. Is this purely mechanical or is it due to anemia of the nerve trunks?

We know that the nerves may be rendered ischemic by constriction. To decide the matter, von Frey experimented with animals and succeeded in producing ischemia of the sciatic, having isolated it below the foramen and then constricted it at the latter. Later he faradized the nerve and caused all the muscles to contract. Ischemia, then, is not the cause of the nerve disturbance, which must be due purely to mechanical injury to the nerve trunks as a result of the application of the elastic bandage. von Frey's observations and experiments were corroborated by Köbner,[29] Bernhardt[30] and H. Braun, no less than 11 clinical cases being on record up to 1894.

Writing of ischemia of the muscles produced by cold and giving the clinical picture seen in the ordinary Volkmann type due to tight splints, Lorenz states that cases with histologic findings have been placed on record by Kraske and the younger Volkmann. The muscles

28. Von Frey: Wien. klin. Wochft., 1894, vol. vii, p. 23.
29. Köbner: Deutsch. med. Wochft., 1888, p. 186.
30. Bernhardt: Arch. f. Psychiatrie, 1888, vol. xix, p. 514.

and vascular walls suffer chiefly in this type, although gangrene of the skin may co-exist.

Lorenz states that the embolic type of muscular ischemic paralysis may be due either to embolism or thrombosis of the arteries when the occlusion is sufficient to prevent collateral circulation. Emboli are secondary to heart disease, thrombosis to diseases of the vessels themselves (syphilitic endarteritis, endarteritis obliterans), or as a sequela of acute infectious diseases, marasmus, etc., arteriosclerosis being a factor. Still other cases appear to be due primarily to nerve lesions which affect the vessels secondarily (Raynaud's disease, Morvan's disease). Finally, there is a traumatic type due to injury to arterial trunks. However produced, ischemic muscular paralysis and contracture is one and the same condition. The symptoms caused by sudden plugging of a large arterial trunk by an embolus agree closely with those produced by the application of overtight splints. It is said of the type produced by cold that it has a better prognosis than have the other forms.

In regard to the medicolegal aspects of Volkmann's contracture, Kriege[31] writes as follows: "The contracture occurred, as a rule, in children who had sustained uncomplicated fractures of the upper extremity. Plaster of Paris was used more frequently than splints. In nearly every instance there were 'warning signs' that the dressings were too tight. The diagnosis presents hardly any difficulty, Volkmann having laid down the rules. As to prognosis, the severe type of contracture and the prolonged paralyses are practically incurable, but all cases demand patient and careful treatment.

"The medicolegal witness has to determine the following: (a) Whether an ischemic paralysis or contracture is present. This should not be difficult on careful notation of the electrical behavior of the muscles. (b) Whether the tightness of the dressings was at fault or whether there was originally a lesion of the artery: this is decided by the presence or absence of the pulse beat below the fracture. (c) What are the disadvantages to the patient arising from the contracture? and (d) Whether the surgeon did or did not give to the case the care that his calling requires."

SURGERY OF THE SPINAL CORD.*

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Surgical intervention in spinal cord affections has been at all times a matter of hesitation on the part of surgeons. Results were so varied and indefinite that for a long time no conclusions could be drawn as to the necessity and probable outcome of operative treatment. Statistics were meager and their reliability doubted where favorable results were recorded. In this paper I shall deal mainly with the different types of injuries to the spine and spinal cord, and endeavor to bring out the important points in diagnosis and definite indications for surgical treatment in cases amenable to it. I also hope to be able to show that in certain cases patients should not be operated on, as the cases are absolutely hopeless from our histologic knowledge of spinal cord degeneration and regeneration. Of course, it goes without saying that the basis of all this work is a very thorough and comprehensive knowledge of the anatomy, histology, embryology and physiology of the central and peripheral nervous system.[1]

The subjects to be discussed are:

a. Contusion.
b. Concussion.
c. Punctured wounds of the cord.
d. Hemorrhage or clot in spinal canal and cord.
e. Dislocations and fractures.
  1. Contusion of the cord.
  2. Compression without division.
  3. Partial division of the cord.
  4. Total division of the cord.
f. Gunshot wounds.
g. Tuberculosis of the spine and spinal cord.
h. Tumors.
i. Spina bifida.

CONTUSIONS.

Contusions of the spine may be of various degrees. They may affect the superficial tissues, as the muscles and ligaments, cause an effusion of blood into the spinal canal or cord, or cause traumatic zonal inflammation with paralysis without division of the axons. The symptoms following a contusion to the spine may be widely at variance with the apparent degree of trauma, and a classic clinical picture can not be drawn. In many of the cases of contusion to the spine, even in those of severe character, we may be surprised to find no symptoms of cord injury at the beginning. I have had several cases under my personal observation in which no initial symptoms were present, but in which, in a short time, varying from a few days to several weeks, a traumatic reaction set in, and the patient developed complete paraplegia of both motion and sensation. The following case will illustrate this statement:

G. M., aged 23, while carrying a carboy of acid across a bridge, fell a distance of 12 feet and struck on his buttocks. He felt some pain after the fall, but was able to resume his work in a few hours. For three days following the injury he was able to walk and work. On the fourth day he felt a pain in his back and was obliged to discontinue work. From that time on weakness and incoördination of the limbs gradually developed, although he was able to walk with the assistance of crutches for about three weeks. At this time, on examination, I found that the spine was sensitive to pressure at the eleventh lumbar junction, but no fracture could be detected. There was no numbness of the limbs, but incoördination of motion. Within two weeks his paralysis was complete below the level of the dorsal lumbar junction. This continued for three months. At the end of this time sensation began to return. There was partial restoration of motion at the end of four months. In June (four months later) the patient was again able to walk with the assistance of crutches, and finally, at the end of 14 months, motion and sensation were completely restored.

This case illustrates two points: First, the absence of initial evidence of injury to the cord and development of paralysis five weeks later; second, complete restoration of function without surgical intervention after 14 months.

In such cases, while there is no gross anatomic change in the spinal cord and its membranes, we are convinced that some changes must have taken place later in its vessels and neuroglia, which interrupted the transmission of impulses. Cases of this type have been interpreted clinically as destruction of spinal cord with regeneration. They do not deserve such interpretation. They are simply cases of zonal paralyses which are produced

31. Kriege: Vierteljahr. f. gerichtl. Med., 1903, vol. xxv, Supplement, p. 55.

* Abstract of a paper on "Surgery of the Spinal Cord and Peripheral Nervous System," read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. This part of the paper had to be omitted; the paper in full, including the portion on the surgery of peripheral nerves, will appear in Surgery, Gynecology and Obstetrics, April, 1907.

without division of the cord or axons and are completely restored after the inflammatory condition has subsided, and the products of the inflammation have been removed. There is no regeneration of spinal axons. The observation of Schmauss, namely, edema and swelling of the ganglionic cells and of axons in the traumatized cord of rabbits, does not necessarily mean degeneration. We interpret that as an atrophy, as shown by the frequent recoveries in similar cases in man. These have proven the truth of this assumption. Several observers have noted cellular changes in the gray matter and neuroglia of the cord after applying great force to the spinal column, insufficient, however, to produce fracture or dislocation. Following laminectomies we frequently have complete paraplegia with full restoration of function illustrating operative, zonal, inflammatory reaction.

An insignificant trauma of the spine may cause marked paralysis.

Aug. 18, 1886, I had under my care a patient who, while sitting in a hammock, tipped backward, falling a distance of two feet to the ground. Immediately after the accident he developed a paralysis of motion and a numbness of sensation in both the upper and lower extremities. There was no special deformity or displacement, but great sensitiveness at the fifth cervical spinous process. In November of the same year the patient was able to walk, though hesitatingly, and had still a numbness of sensation in the previously paralyzed members. In May, 1887, he was still coming to my office. At the same time he was practically well, except for some unsteadiness of gait and uncertainty of equilibrium when he turned suddenly. The index and middle fingers of the right hand were the last to recover. This is a good illustration of the traumatic transient type of zonal paralysis.

CONCUSSIONS.

By spinal concussion is meant an impairment or loss of function of the spinal cord due to injury which is not sufficient to produce gross anatomic changes. The term "spinal concussion" is accepted by some surgeons and rejected by others. While spinal concussion is a temporary reaction, it is not a definite morbid entity. We do not accept as spinal concussion other cases than those with symptoms of pronounced zonal hyperesthesia or anesthesia and with a zone of diminished reflex, or paralysis partial or complete. Those who deny spinal concussion base their views on anatomic grounds, namely, the small size of the cord, as compared with the spinal canal, and its suspension in the canal by the denticulate ligaments and nerve roots which protect it from injury in traumas short of fracture or dislocation.

In this connection we must mention that hemorrhage in the spinal canal may produce an exact clinical picture of spinal concussion. Therefore, differential diagnosis between these two conditions is quite impossible. There are several cases on record, however, where the disappearance of paralytic symptoms in a short time point to the probability of spinal concussion. On the other hand, many postmortem examinations have not shown any anatomic changes in cases where marked paralysis following injury were noticed, and continued up to the time of death. In Guy's Hospital Reports is recorded the case of a woman, 59 years of age, who fell on her back and immediately developed marked paralysis of the upper and lower extremities. On the tenth day she died of pneumonia. A careful postmortem examination was made and no anatomic changes were found either in the brain or cord. There was no evidence of effusion of blood in the spinal cord or canal.

In my experience I have had several cases of injury to the spine in which physical examination did not reveal evidence of dislocation or fractures, although the patients developed marked paralytic symptoms. In most of these cases perfect recovery took place in from six to twenty months.

PUNCTURED WOUNDS OF THE CORD.

The knife is usually responsible for such wounds. The cord may be injured without fracture of the vertebra. Wagner-Stolper has collected 86 cases of punctured wounds of the cord. Of these, more than half occurred in the cervical portion of the cord and the remainder in the upper region of the dorsal part. There was no case of puncture of the lumbar cord. The reason for the cord being punctured more often in the upper than in the lower part is very simple. The object attacked by an assailant is generally the head, and anatomically there is a considerable interspace between the vertebræ in this region for the admission of the knife blade. As a rule, such wounds involve one-half the cord, though sometimes the knife may pass beyond the median line and injure the other side.

The clinical picture of punctured wounds of the cord is that of a hemisection lesion. Out of Wagner-Stolper's 86 cases, 44 presented the picture of hemisection. The symptoms appeared immediately after the injury, and the course was generally an aseptic one. Twenty per cent. of the patients died. The remainder improved, but few recovered.

So far as treatment is concerned, very little can be done beyond rendering the external wound aseptic, and keeping it so. Operation is never indicated, except where infection of the spinal canal has occurred, or when there is compression from hemorrhage. If this occurs early it can be relieved by a lumbar puncture done with a large needle. The divided axons of the cord do not regenerate as they have no neurilemma, and suture of the severed segments is not only useless, but adds to the danger present. Such paralysis as results from effusion or traumatic zonal inflammation will subside without operation. Therefore, these cases all contraindicate laminectomy.

HEMORRHAGE IN THE DURA AND SPINAL CORD.

The blood may occupy the spinal canal, extra dural, may be beneath the meninges, or may be in the substance of the cord itself. In the second case it is called hematorrachis; in the third, hematomyelia. The most important etiologic factor of hematorrachis and hematomyelia is trauma from a blow, fall, gunshot or stab wound of the spinal canal.

The symptomatology of hematorrachis is not definite. Patients usually complain of pain in the spine, paroxysmal and burning in character, pain along the nerves, and occasionally muscular spasms, opisthotonos, convulsions and finally paraplegia. While the paraplegia is sudden and complete in fractures and lesser injuries to the spine, in hematorrachis it is gradual and progressive, often developing two to four days after the injury. The symptoms of hematorrachis usually develop in the first 24 hours, increase in severity up to the fourth day, and disappear in from four to six weeks. There are, however, cases in which the paraplegia is sudden and complete, depending on the size of the vessel, as in a case of mine of a bullet wound of the cervical region, and one of Edward Janeway.

The best test for hemorrhage (in fractures, bullet wounds, etc.) is lumbar spinal puncture. Twenty to 30 c.c. of fluid may be drawn off. If the cord is injured above the puncture then the spinal fluid may be bloody.

The hemorrhage may be extra- or intradural, or combined. When the dura is lacerated, hemorrhage is usually due to rupture of the venous plexus, and rarely to rupture of the arteries. The blood has a tendency to extend downward, and, therefore, the hemorrhage is more extensive if the lesion is situated high up. As the lumen of the spinal canal is large, the quantity of blood is considerable. Diagnosis of intradural hemorrhage can readily be made by lumbar puncture, and the pressure of the cord relieved by this procedure, if the puncture is made early.

While hemorrhage is generally due to injury, occasionally it may be non-traumatic in origin. Edward Janeway reports a case of spontaneous subarachnoid hemorrhage in a bleeder. The young man, after having recovered from a slight attack of influenza, suddenly lost sensation and motion in the lower extremities and fell to the floor. The autopsy revealed extensive hemorrhage in the subarachnoid space up to the middle cervical region. There was also some blood between the dura and the arachnoid. The patient's brother was also a bleeder.

Hemorrhage into the spinal canal may produce marked paralytic symptoms, even to complete paraplegia. In such cases diagnosis can not easily be established, as illustrated by the following case from my practice in Cook County Hospital in 1887:

A man was shot in the neck. The bullet passed external to the jugular vein just above the clavicle. He said he did not fall immediately after this wound. A second bullet passed through the shoulder and hand, when he fell to the floor. He was taken to the hospital shortly after the accident. There was complete paralysis of the upper and lower extremities and he was able to move the muscles of the neck only. The diaphragm acted on both sides. It was concluded that the patient's statement was wrong, and that in all probability the first bullet entered the shoulder and hand, while the second one struck and divided the cervical region of the cord. He died on the third day.

The autopsy showed that the cord was not injured by the bullet. The meninges were divided and the intravertebral artery was severed, which permitted an extensive hemorrhage within the dura; this was filled with blood from the occiput to the cauda. In all probability the man's life could have been saved if the tension had been relieved by immediate tapping of the spinal canal in the lumbar region. From the postmortem findings it was evident that the first bullet entered the neck, as was stated by the patient, and the second the shoulder and hand, and that his fall was due to the blood pressure on the spinal cord from the hemorrhage in the canal.

Hematomyelia.—Hemorrhage into the substance of the cord usually occurs in the region of the fourth, fifth and sixth cervical vertebræ. According to Thorburn, the hemorrhage in that region is due to over-flexion of the spine. If the hemorrhage in that region is confined to the gray substance only, there is wasting of muscle and anesthesia of the upper limbs; also zonal absence of reflex. If the hemorrhage involves the white substance there is paraplegia below the level of the lesion.

Prognosis must be guarded in cases of hematomyelia. Even in cases of recovery there is always a weakness left, due to the destruction of the gangion cells of the motor neuron at the point of hemorrhage. Hematomyelia may be due to gliosis spinalis. A patient of von Bergmann, a girl 19 years of age, died from this condition, as shown by the postmortem examination.

DISLOCATIONS AND FRACTURES.

Dislocations.—A dislocation without fracture practically never occurs. Rarely do we find luxation alone of the upper segment, but, as a rule, dislocation is associated with fractures, and the symptoms are those of compression. Recovery is possible, if the cord is not divided, and the compression is relieved early. The subject will, therefore, be treated under the head of fractures, and included with them will be associated luxations.

Fractures.—Fractures may be due to direct or indirect causes, as, for instance, forced flexion. The direct force may fracture a vertebra, but, as a rule, the fragments are not displaced. The laminæ and spinous processes may be driven into the spinal canal and cut off and thus compress the cord. This, however, is a rare type of accident and one diagnosed readily. The bony fragments do not compress or lacerate the cord, at least not primarily. The following history is a striking illustration of an exception to this rule:

Patient.—T. Y., aged 38, Italian laborer, was admitted to the Presbyterian Hospital, May 3, 1906.

History.—While attempting to get off a moving train April 27 he fell or was thrown, and was unconscious for 15 minutes. On regaining consciousness he was unable to move the lower extremities and complained of severe pain in the back. He had retention of urine since that time, and it had been necessary to catheterize him. The patient did not know in what position he fell at the time of the accident.

Examination.—He was of fair muscular development. Head, neck and chest negative, except congestion of the lower lobes of the lungs. Abdomen was negative; marked hematoma over the lower lumbar region. The vertebral column showed a most pronounced angle at the level of the third lumbar vertebra; the lower fragment was displaced forward about an inch and a half, a superficial abrasion being present at this point. The displacement could not be reduced by manipulation or extension. The left foot showed a hematoma on the internal aspect of the heel. There was a complete paralysis of sensation and motion below the second lumbar zone. Reflexes: Abdominal, present; cremasteric, abolished; patellar and Babinski, absent.

Diagnosis.—Fracture of spine, with anterior displacement of the lower segment and division of the caudal fasciculi.

Operation.—May 3, 1906. The fractured zone was exposed by single incision. It was found that the arch of the second lumbar vertebra was driven in and had compressed the cauda. The third and remaining vertebræ below were displaced forward; the arches of the third and fourth and the body of the third were fractured, and the spinous processes driven down in the cord. Almost all of the caudal filaments were divided by the great forward displacement of the lower segment. The second, third and fourth spinous processes and laminæ were entirely removed; the dura was opened for a considerable distance by a longitudinal incision, the fasciculi were picked up and the divided filaments united by an end-to-end suture. The right and left halves of the proximal ends were easily determined by their position. The distal ends were considerably entangled, but the right and left could be differentiated by applying the faradic exciter to the filaments. This caused a muscular contraction in its respective muscles notwithstanding that four days had elapsed since the division; when applied proximately to the contusion there was no muscular response. This muscular response after division corresponded to that obtained in our examinations of divided peripheral nerves the same length of time after their separation. After completing the approximations, the dura was sutured in position, and a muscle flap drawn from each side, filling the gap to the skin level. The patient stood the operation fairly well, although his breathing was noticeably more rapid than at the beginning. From these physical findings we concluded that the man was struck in the back with great force, which first fractured the spinous processes and laminæ of three of the vertebræ, and then carried the lower segment forward for a full inch. He died on the morning of May 7, apparently from a double pneumonia. There was no autopsy.

Indirect force may produce fracture and displace the fragments of the vertebra, so as either to concuss, com-

press or divide the cord, as falls on the buttocks and shoulders, or extreme flexions or extensions of the body. In these cases the site of fracture is usually at the dorsolumbar junction. Where the paralysis is immediate, uniformly transverse and complete, both of motion and sensation, there is no hope of recovery either with or without operation, as the spinal cord is divided. Surgical intervention is of value only in cases where the fragments press on the cord without having caused complete division. None of my patients in which the cord was divided by a fragment, recovered. The degree of pressure on the spinal cord can not easily be determined, and it is difficult to tell at the beginning how much pressure is being exerted on the intact cord. One can fairly accurately estimate when the cord is completely divided, as there is then a complete immediate annular paralysis of both motion and sensations, thermal, tactile and deep and superficial pain below the line of fracture, and a primary absence of tendon reflex. These cases are beyond repair.

Fracture with contusion of the cord may cause a motor or sensory paralysis below the line of union. The paralysis is rarely immediate, and is never complete and annular of both motion and sensation. The irregularities indicate that some columns of the cord are still intact; usually the paralysis comes on hours, days or weeks after the trauma. It is preceded by a zone of pronounced hyperesthesia and is accompanied by abolished reflexes in this zone. The motor or sensory manifestations will predominate, depending on whether the anterior or posterior columns of the cord have suffered most. Compression may be associated with contusion.

There is no known means of making a differential diagnosis of continued compression in addition to contusion; the degree of displacement of the spinous processes being the only physical manifestation we have for suspecting compression in addition to contusion. Both may give the same degree of primary paralysis. Both may give the same speedy or slow increase in the paralysis; both may have a stationary degree of paralysis for a considerable period of time; both may have a late manifestation of paralysis, as shown in the cases cited under contusions. Therefore, differential diagnosis is impossible without laminectomy, which, however, is a procedure to be avoided, as a contused cord suffers additional insult by any operation, no matter how delicately performed. However, where compression is suspected on account of the great displacement, one must not hesitate, but operate immediately.

Partial divisions of the cord give a symptom complex resembling contusion, in that there is an irregularity in the transverse line of paralysis, and either sensation or motion may be present to a limited degree. Operation is contraindicated except where continuous compression is suspected.

Dr. Walton says: "We have no symptoms from which we can assert from the outset that the cord is crushed beyond at least a certain degree of repair. It has been said that where there is complete loss of sensation, of motion and of patellar reflexes, the cord is completely crushed, and consequently recovery can not be expected." It is stated in the same article that the patellar reflexes may be present in a case of complete transverse destruction of a segment of the cord. This is possible secondarily as the ganglionic cells of the motor neuron below the point of division may be in perfect condition, though the contact axons of the central neurons are divided.

In fractures, with division of the true cord, operation with suture of the cord is absolutely worthless; functional regeneration of the columns of gray matter never takes place. The improvements recorded by many authors were in cases in which only contusion or hemorrhagic compression of the cord existed, or where the type of traumatic zonal paralysis was present, which would have improved as well, if not better, without operation. Laminectomy in the dorsal and cervical region is, therefore, never indicated for division of the cord.

When the fracture occurs in or below the twelfth dorsal vertebra the treatment and prognosis are entirely altered. The cauda equina, which begins here, is made up of essentially peripheral nerve fasciculi, and not of spinal cord fasciculi, as the axons of the motor root in this portion have their ganglion trophic cell bodies above this level in the conus, and the motor axons in the cauda are covered with the sheath of Schwann, or neurilemma. They therefore degenerate after division and have the power of regenerating, the same as peripheral, motor axons. The sensory neurons of the posterior roots of the cauda have their ganglion cells just inside the sacral and lumbar foramina. Their proximal axons, which run through the cauda to the spinal cord, are medullated and have a sheath of Schwann. They are capable of regeneration, at least up to the posterior commissures, and from clinical observation, we believe they can again come in functional contact with the posterior horn of gray matter. In other words, both the motor and sensory neurons in the cauda outside of the cord are histologically capable of regeneration under favorable conditions; that is, after accurate suture, and exact approximation of the ends of the divided caudal fasciculi under aseptic conditions. It therefore becomes imperative for us to establish this approximation in every case of fracture of the lumbar spine with division of the caudal fasciculi and paraplegia.

It is easy to determine, up to the seventh day after the injury, by a mild faradic current, which are the right and left fasciculi. If the faradic current is applied to the individual nerve bundle distal to the trauma, there is a muscular response in the zone supplied by that bundle as shown in case of T. Y. If applied proximal to line of division, or even in severe contusion, there is no electric response. This corresponds exactly with the electric response after division of peripheral spinal nerves, external to the bony canal. Laminectomy with suture in this position is not extremely difficult. It has in it, however, the danger of sepsis, as the spinal canal and dura are open.

In every case of fracture, stab or bullet wound, where, supposedly, the cauda has been divided, exposure and suture of the fasciculi are positively indicated, the individual points of suture to be surrounded by egg membrane to lessen connective tissue interpositions. (The transplantations of caudal fibers in the treatment of unilateral paralysis of the entire lower extremity will be described in the article on peripheral surgery under its subdivision nerve anastomosis in anterior poliomyelitis.)

GUNSHOT WOUNDS.

Theodore Previtt collected 49 cases of gunshot injuries treated since the antiseptic era. Of those operated on, 11 recovered and 13 died; of those not operated on, 8 recovered and 17 died. Mortality: Cervical region, 55 per cent.; dorsal region, 66 per cent.; lumbar region, none. Three cases of the latter had operations and all recovered. Previtt concludes as follows: a. Immediate

operation if the wound is in an accessible region, and if it involves posterior or lateral portions of the spine. b. It is imprudent sometimes to wait for repair to be effected by Nature.

In bullet wounds of the spine, involving the spinal cord itself, operation is contraindicated, as from our knowledge of the absence of regeneration of the spinal cord proper, operation would be useless. If the cord is not severed, such fibers as are not divided will recover from the zonal paralysis resulting from the contusion and concussion without operation, while the fibers which are divided can not derive any benefit from surgical procedure. If the bullet remains within the spinal cord and compresses the cord, as the skiagrams will readily show, it should be removed. If the cord is compressed by fragments of bone, which may also be determined by the Roentgen ray, operation is indicated. If the cord is compressed by accumulated blood within the meninges, a lumbar puncture for its relief is indicated. The blood is kept fluid by its intermixture with the cerebrospinal fluid.

Mortality.—The causes of mortality from fractures of the cervical region are due to interference with the essential function of the centers of the spinal cord. Death may occur on the third or fourth day as the result of the degree of fracture. In fractures in the neighborhood of the fourth and fifth cervical, the temperature reaches as high as 106, 107 or 108 F., and even higher, as in one of my cases as high as 111 F. This is a central temperature from the destruction of the automatic center of temperature control. Respiration may be compromised from the injury of the phrenic segment of the cord, which corresponds to the fourth and fifth cervical.

With fracture in the upper dorsal region, the functions of the abdominal organs are greatly disturbed, and there is paralysis of peristalsis; enormous tympany may result; respiration may be impaired by the intra-abdominal pressure on the diaphragm. In fractures of the spine above the second lumbar, sphincteric control is destroyed.

Of the secondary causes of death the most prominent are vesical infection and ascending sepsis to the kidney. Next in frequency is the decubitus infection. The former can be avoided in a large per cent. of the cases by permitting the bladder to overflow from the beginning and refraining absolutely from using the catheter. If the catheter has once been used and decomposition takes place, then it must be continued. Relaxation of the vesical sphincter is favored by transprocteal massage. The decubitus can be avoided or retarded by the water bed, air cushion, frequent changes of position and by dermal cleanliness.

John Chadwick Oliver reports 57 cases of fracture and dislocations of the vertebræ. Fifty of these developed nerve symptoms after the injury; seven showed no evidence of spinal involvement.

Thorburn collected 56 cases in which the patients were operated on with 38 deaths, 67.8 per cent.; 18 recovered from the injury; 2 recovered from cord symptoms, and 16 showed little or slight improvement. Dr. Samuel Lloyd collected statistics on 185 operations, with only 24 recoveries and 40 improvements. There were only 12 improvements by immediate operation; that is, there were only 12 that improved from the symptoms at time of operation. From various statistics of cases in which the patients were not operated on, and from my experience, the immediate mortality is no small percentage. The number of recoveries in 82 immediate operations was five. The recoveries without operative interference far exceed this number. The number of recoveries with late operation is a little more gratifying; there were 19 recoveries in 113 operations, which, when compared to the number of late recoveries without operation, may be considered as giving us some justification for the late operation. Lloyd's results are about 50 per cent. better than Chipault's. Chipault, in 1894, published 167 cases in which operation was done for fractures of the spine; 12 recovered and 24 improved.

INDICATIONS FOR, AND TIME OF, OPERATION.

In the cases that have come under my observation, it has been difficult, and many times impossible to ascertain whether I was in the presence of a case of division of the cord, or reaction of the cord due to trauma. Therefore, I always hesitate about operating until I am satisfied that the cord is not completely divided. The immediate complete bilateral circular paralysis of both motion and sensation is the only positive evidence of division of the cord. Where there is definite evidence of fracture or dislocation with division of the cord by fragments, operation is contraindicated and should not be performed. Where there is evidence of compression by blood or small bone fragments with fracture or dislocations, as shown by the fact that the paralysis is not immediate, not circular and not complete of both motion and sensation, an immediate operation may be indicated. Where the symptoms are persistent, the operation should be performed.

John Chadwick Oliver divides the surgeons into three groups: First, those who advocate operation in every case of injury to the spine in which cord symptoms are present. Second, those who abstain completely from operation. Third, those who advise operation in selected cases. I belong to the last class of surgeons. Eugene Hahn[2] advises operation as early as possible, and particularly in cases of compression due to fractures of the arch, which always result from direct violence. However, he says the question of early operation is not settled as yet.

Andrew McCosh condemns the waiting and watching policy. He advises early operation unless severe shock is present. Kocher is of the opinion that operation can be delayed and advantageously performed after long-continued pressure has been present. There are several cases on record where patients were apparently benefited by late operation. This is in consonance with a mild and gradual paralysis from neoplasms within the canal, but one can not see how that type of pressure would be exerted by a displaced fragment, but it might be by the callus of bone repair.

Carl Lauenstein records a case in which an excellent result was obtained five weeks after injury. Paraplegia, rectal and urinary symptoms and trophic changes were present in this case. This is no proof at all that there was compression or that operation had anything whatever to do with the result, as the train of symptoms, and the result obtained, occur frequently from contusion with fracture without compression. McCosh records a case in which paralysis had been present eight months, and yet complete recovery occurred after operation. L. A. Weeks reports a case by Huss, in which recovery followed surgical intervention one month after the injury. Allen Starr reports a case of compression of the cauda equina of one year's standing. Operation was followed by partial recovery. Some anesthesia persisted.

2. Deutsche Ztschr. f. Chir., 1902, lxiii, p. 995.

Samuel Lloyd says: "In my opinion we should wait until the period of shock is passed and until there is evidence that there will be no spontaneous recovery." If, after this period, the patient still continues to improve, no operation should be considered, but as soon as the symptoms begin to show retrograde phenomena, or seem to have reached the end of improvement, operation should be undertaken. This rule is not applicable with any degree of force or regularity as far as our observations tend. Recoveries after operation performed within a period of two and one-half years after the accident can not be attributed to the beneficial effects of the operation, except in the cases where fragments or foreign bodies were compressing the cord.

TUBERCULOUS OSTEITIS OF THE VERTEBRÆ; VERTEBRAL CARIES; TUBERCULOUS GRANULOMATA.

Under this head we do not intend to describe in detail vertebral caries. We will consider only that phase of the pathologic process which directly or indirectly may produce pressure symptoms on the cord. In other words, we will deal principally with the tuberculoma, which should be regarded as an extradural tumor.

It is practically an extradural tumor situated on the posterior portion of the vertebral body and in front of the cord; if it is of considerable size it may spread to the sides of the cord. It is never, however, posterior to it. From this we can understand that the primary symptoms will be principally motor as the pressure concerns the anterior or the anterolateral column. Sensory disturbances may take place, not by compression of the posterior columns, but by pressure against the posterior roots at their exit and also on Gower's column. From the symptoms one can accurately estimate the location of the tuberculoma, that is, which cord segment, and which column is compressed. One can not, however, judge from the symptoms whether the cord is merely compressed without having undergone degeneration, or whether there is degeneration of the cord substance. In localizing the tuberculous tumor it should be borne in mind that one is likely to make the error of estimating it too low.

The topography of cord segments in their relation to the vertebral bodies must be clearly pictured in the mind of the diagnostician. The splendid work of Victor Horsley, who has done so much to elucidate this condition, should be carefully studied by every one contemplating work in this line.

Prognosis.—The prognosis in the paraplegia of spinal caries is always grave. Statistics from Billroth's clinic, quoted by Oppenheim, show that out of 97 patients, 48 died, 28 were cured and 11 remained unchanged. Gowers states that the paralysis due to vertebral caries is the most favorable of all types of paralyses. Generally speaking, the prognosis does not depend so much on the age of the individual nor on the intensity and extent of the symptoms, as on the amount of damage done to the cord substance which does not allow of repair, if the pressure has been long continued. Operative procedure must, therefore, be timely.

Operation.—The operation for tuberculoma is a simple laminectomy (see laminectomy). Displace the cord to one side, expose the granuloma, remove it with a bone curette, fill the cavity with a Moorhof plug, replace the laminæ and close without drainage. It is usually not necessary to open the meninges. One should not hesitate to curette extensively the vertebral bodies. If the wound heals without suppuration and the cord has not long been compressed, the paraplegia rapidly disappears. If a mixed infection follows, the cord may be destroyed and a permanent paraplegia result, as occurred in one of my early cases.

Technic of Laminectomy.—Before proceeding with a primary incision, it should be definitely determined by the operator whether his plan is to extirpate the spinous processes and laminæ entirely, or to preserve them. If the former is decided on, longitudinal incision should be made parallel to the spinous processes on the operator's side of the middle line. The incision should extend down the sides of the processes close to the bone. After thoroughly exposing the muscle, a blunt dissection may be made on the lateral surface of the processes to the laminæ. The attachment of the flap to the tip of the processes is then divided, and a similar blunt dissection made on the opposite side of the processes down to the laminæ, as shown in cuts by Bickham,[3] indicating also the points of division of the lamina.

The hemorrhage, which has been considerable, can now be checked by gauze packing. The inter-laminar spaces of one, two or three vertebræ should be exposed, and the conical drill rongeur, which I have adapted for this purpose, should be used to puncture the laminæ at the base of each transverse process. The tips of my rectangular guarded bone-cutting forceps can be inserted in each of these punctures and the laminæ divided. The interspinous ligament is next divided. The spinous processes and laminæ can be lifted up readily with a sequestrum forceps. This plan avoids all malleting and concussion of the cord, and guards against its possible puncture; it hastens the procedure very materially.

The dura may now be opened, if desired, and the cord inspected, or if searching for a tuberculoma, the cord can be pushed to one side and the tumor recognized on one or the other side, anterior to the cord in the body of the vertebra, where it always forms. The dura should be sutured carefully with catgut after the operation. If it is the purpose of the surgeon to conserve the processes and laminæ, then the H-shaped incision is preferable, leaving a septum of tissue, muscle and skin one inch in diameter between the two parallel incisions, making the muscular blunt dissection one-half inch from the bone to the side. The laminæ should be punctured in the same way and divided with rectangular bone forceps, and then the interspinous ligament is divided and the flap turned half up and half down.

In replacing this, care should be exercised that the bone flap does not compress the cord. The flap should be closed by deep catgut sutures and superficial sutures of silkworm gut. Horsehair should not be relied on, as its tension is so great in these cases that this suture may give way. I had a case of compression by bone flap after operation, resulting in permanent paralysis. Since that time I have removed laminæ and spinous processes completely, and have found no permanent weakness of the spinal column following the procedure. In fracture and dislocation it is always desirable to remove the laminæ, as the luxation frequently can not be reduced at the operation, and there is danger of compression of the cord after the parts are replaced.

In pronounced deformities following fractures, one should not hesitate to remove the protruding edge of the fractured body of vertebra. This may necessitate a division of one of the spinal nerve roots. Traction should be made on the nerve to draw it well into the canal; it may then be divided and sutured at the close

3. Am. Surg., 1905.

of the procedure. The greatest care must be exercised in the manipulation of the cord, as it requires but a slight degree of trauma to produce a zonal paralysis. In most of my cases a complete temporary paralysis immediately followed the operation.

It is, however, only a zonal or traumatic paralysis, and entirely disappears as long as the centripetal and centrifugal axons are not divided and the ganglionic cells not severely traumatized; complete restoration always follows. One of the unpleasant features of this work is the length of time necessary to obtain results, six months to two years being required for a restoration of function. However, the time is not too long nor the labor expended too great, as otherwise the patient has before him no hope, except a permanent paraplegia. In handling these patients after operation, care should be exercised that too great pressure should not be exerted on the vertebral bodies while moving the patients from one cart to another and to their beds.

It is unnecessary to say that all these cases should be drained temporarily and that all aseptic precautions should be taken, as infections are more likely to occur here than in the peritoneum. If the meninges become infected, the case is likely to terminate fatally. Every precaution against bed sores (decubitus) must be taken. The bladder should not be catheterized; the patient should have a vaginal or procteal massage until overflowing is produced. The urine once started will continue to flow. If the catheter is once used it will have to be used continually, and decomposition of urine will occur. This will necessitate frequent vesical irrigation, greatly increase the labor in caring for the patient, and very materially hazard his life, as vesical and ascending renal infection is the most common cause of death after operation for injuries to the spinal cord.

SPINA BIFIDA.

Spina bifida is a congenital malformation of the spinal column, meninges, cord proper or ependyma, consisting of a protrusion either of the meninges or of meninges and spinal cord through a cleft, resulting from failure of coalescence of the borders of neural groove, or absence of the vertebral arches.

The nerve elements of the spinal cord are of ectodermic origin exclusively. The cord is an invagination of the ectoderm forming a groove which is widely open at first, gradually closing to form a tube—the neural tube. The mesoderm supplies the serous, bony and muscular elements which arrange themselves around the neural tube. A malunion or absence of the involuting neurilemmic elements which form the vertebral arches and spinous processes will leave a cleft through which the meninges alone, or with the spinal cord, will protrude posteriorly, because of lack of support.

The defective coalescence of the spinal processes may be either partial or complete. In the first instance the opening involves two or three vertebræ, either in the lumbar or cervical region, as these are the last to close; the latter is the more frequent. Complete absence of union is called *rachischisis totalis*, and is an uninterrupted opening extending from the cervical to the sacral region. This variety of spina bifida, however, is extremely rare.

In the circumscribed type of the spina bifida we find a protruding tumor, the size of which may vary from 3 to 15 centimeters in diameter, having either a broad or pedunculated base. The sac usually protrudes posteriorly. Occasionally, the sac bulges anteriorly, it escapes through the defective body or process or through the spinal foramina, as shown in the following cases, and is discovered by accident. Several cases of this type are recorded in the literature; De Forest Willard reports the case of a child 2 months old with a large cyst palpable through the right iliac fossa. The cystic tumor which communicated directly with the spinal canal bulged anteriorly when coughing. Its walls were the meninges and the contents cerebrospinal fluid. Emmet reported a case in a woman 36 years of age with a very large cyst extending down to the pelvis. It was aspirated through the rectum and three quarts of fluid removed.

The patient died on the seventh day of septic meningitis. Postmortem examination revealed a cyst formed of meningeal membranes, which protruded into the pelvis through the sacral foramina. Robinson operated in the case of a child 11 months old, who had a large cystic tumor occupying the entire right side of the abdomen. The patient had club feet; there was no tumor to be found posterior to the sacrum. A diagnosis of parovarian or broad ligament cyst of fetal origin was made. During the operation the surgeon found that the cyst communicated directly with the spinal canal, and that it was anterior spina bifida. Patient died after ten days. Postmortem showed extensive defects on the right side of the last dorsal and first lumbar vertebræ. The pedicles of the transverse process of the last vertebra were absent. The first two lumbar vertebræ had an undeveloped point of ossification on the right half, while the third lumbar vertebra had no point of ossification at all. The spinal column was curved laterally, the concavity being directed toward the left. There was a marked dilatation of the ependymal canal. Bryant reports a case of anterior spina bifida in a woman of 25 who died from trauma. The tumor was discovered accidentally.

Varieties of Spina Bifida.—Dana distinguishes three varieties: (*a*) Meningocele, a protruding sac composed of meningeal membranes and cerebrospinal fluid only. This may be either (1) anterior, abdominal or pelvic; (2) posterior or dorsal. (*b*) Meningomyelocele hydromyelia, a tumor composed of meningeal membranes, cerebrospinal fluid and spinal cord, including the cauda equina. (*c*) Syringomyelocele, composed of meninges, cerebrospinal fluid and spinal cord with an enormous dilatation of the central canal or ependyma.

To these we may add spina bifida occulta, which is a cleft of the spinal column without any visible protrusion of the contents of the spinal canal. In great defects the cord is a velvet-like band containing blood vessels and flattened nerve elements spread out under the meningeal covering. In circumscribed varieties the sac may be covered with skin and hair, or simply with a thin epithelial layer which, together with the pia form an epithelio-serous covering.

In the first variety of Dana, the cord elements may be intact. In the second, the cerebrospinal fluid lies in the subarachnoid sac. The nerve elements of the cord protrude into the sac in two-thirds of the cases. The fibers are attached on the posterior and median surface of the sac and form a part of the cyst wall.

In the third variety, there is a considerable dilatation of the ependymal canal with complete or almost complete pressure atrophy of the spinal cord at the point of dilatation with a paraplegia below that zone.

Treatment.—Treatment consists either in injection or excision. Injection has long been and is still in

vogue. Morton's fluid, which has the following composition, is the one generally used:

℞. Iodin	gr. x	6
Iodid of potassium	gr. xxx	2
Glycerin	ʒi	30

Injection is not free from danger, and its efficacy is very questionable. I have used it three times in one case without any effect, except a temporary disturbance of the central nervous system.

Excision of the sac seems to be the radical and more desirable procedure. The sac is best attacked from the side because the fibers of the cord are more frequently spread and attached to the median portion of the posterior wall, the line of embryonal cleavage. When the sac is pedunculated, it should first be freed from its attachment to the spine and neighboring structures, except its highest point, which is adherent to the skin, and an elliptical subcutaneous flap should be permitted to remain attached to the sac. When the latter is freed to a level with the cord, a provisional ligature should be thrown about its neck without tying. The sac should be opened, carefully examined, and if the cord is not protruding, the ligatures should be firmly tied; an overstitch of catgut should give it additional support. If the base is broad the same procedure should be followed, except that after opening the sac and inspecting it, the ligature should be removed. It should then be amputated at its base and carefully sutured if it be a case of syringomyelia, and if the cord protrudes into the sac, the fibers of the cord should be freed from their attachment to the meninges and replaced in their normal position; the opening in the sac closed with a continuous chromoform catgut, or preferably, kangaroo tendon suture.

If a complete syringomyelia exists, the cord should be amputated in both directions from the center of elevation to a normal anatomic zone; then a careful end-to-end suture of fibers should be made if the spina bifida be situated in the caudal zone. If above the caudal zone, the cord should be freed and replaced within the dural sac without suture, the opening closed, with little hope of motor improvement offered the patient. The muscles supplied by the distal fibers should be localized by the faradic current. Our results, immediate and remote, have been most satisfactory after this technic.

Mayo-Robson uses a median incision. He also leaves a segment of the skin in place if separation of the cord from it is difficult. He advises that the meninges and skin should not be united on the same longitudinal line. In the clinic at Breslau the meninges are united longitudinally and the skin transversely. After the removal of the sac, in order to prevent subsequent hernia of the contents of the spinal canal, the defect is repaired either by a muscular flap (Bayer), or by osteoplastic flaps (Selenko Boboroff). Mayo-Robson once transplanted periosteum and bones from animals for this purpose. The spinous processes may be divided at their base, leaving the soft parts attached, drawn upward and sutured in the median line to form a bony arch over the posterior surface of the cord.

Prognosis.—The mortality in the treatment of spina bifida by injection of Morton's solution is 20 per cent. Statistics of the Clinical Society in London, which include 71 cases treated by injection, show 49 per cent. cured, 5 per cent. improved, 7 per cent. unchanged, and 38 per cent. mortality.

The following case of spina bifida is the first and only one of this type treated in this manner:

History.—Baby R., family and general history negative. A mass the size of a silver quarter was noted at birth in the median line of the back at about the level of the dorsolumbar junction. This at first was flattened and of a fluctuating consistency. A serosanguinous fluid discharged from the most dependent portion of the tumor. This continued during the first year, but finally yielded to local treatment. The tumor mass gradually increased in size, but the growth during the six months before entering the hospital was very rapid. At the time of entering the hospital the mass was of the size and shape of a small orange, rather tense and fluctuating in consistency. There was no tenderness or any evidence of inflammation in the tumor mass or in the adjacent skin. The child's head had been large from birth and tended to approach the ventricular hydrocephalic type. From birth the child had presented a complete paraplegia with absolute motor paralysis, anesthesia and analgesia; also loss of sphincter control. Teething and talking began at a normal age, that is, as compared with the other children in the family.

Treatment.—A diagnosis was made of syringomyelic spina bifida. Three injections with Morton's fluid were made. There was some reaction, but no appreciable benefit, and operation was decided on.

Operation.—Freeing of the sac showed that the dilatation was central. That is, it was due to an accumulation of fluid within the lower caudal and terminal portion of the ependymal canal producing a pressure destruction of the caudal nerves just below the exit from the conus and not producing a destruction of the conus ganglion cells or axones. Careful dissection was done, separating the dura and sac from other tissues down to the bone border. The cord was found dilated from the center with complete pressure destruction for an inch or more. The peripheral cicatricial mass was dissected out. The ends of the cord, upper and lower, were united with catgut sutures and the divided lateral nerves (lumbar plexus) attached to line of spinal suture. Placing one pole of a battery at the upper and one pole at the lower end of the cord gave a pronounced muscular response in both lower extremities. The dura was closed with a single row of catgut sutures. The opening in the bony spine was also closed. The fractured spinous process was turned upward at its attachment to the transverse process toward the median line and united with heavy catgut sutures. A drain was placed (¼ in. perforated rubber) beneath the line of suture. The aponeuroses of the quadratus lumborum were drawn together over the seam so as to retain lumbar muscle in the center line. The skin flaps were supported by four silkworm gut sutures through hair-line plates. The skin was united with horsehair and a silkworm gut drain was inserted. Cerebrospinal fluid was discharged for two weeks. Temperature went up to 102 F., but subsided. The patient recovered. The feet changed in their temperature and color, and "life expression" was noticeable before the patient left the hospital Dec. 20, 1905.

Postoperative History.—Jan. 14, 1906, the patient was progressing satisfactorily; there was no motion in the extremities; the legs and feet had an expression of "life" about them.

June 16: The patient was in splendid physical condition. The tumor in the back had not reappeared and the spine was apparently normal. The central hydrocephalus has materially increased and the child is showing marked optic atrophy and is almost blind.

Sept. 26, 1906: The limbs had become more firm and had lost their puffy and glossy appearance. The first faradic response was noted June 29, 1906. The limbs had a "living" expression, which they did not have before, showing that trophic changes were taking place. Trophic restoration is the first indication of nerve repair: next comes faradic reaction and finally voluntary motion. It is too soon to expect voluntary motion in this case.

If the dilatation had been 2 inches higher up operation for reunion of the cord would have been worse than useless and the danger from operation greatly increased, for in that position a resection of the sac and restoration of conformation of spine is all that could have been undertaken or justified. It must be borne in mind that the sacral and lumbar nerves pass upward a considerable distance in the spinal canal before they enter the cord or conus and have the neurilemma.

CONCLUSIONS.

The gray and white matter of the spinal cord down to the cauda is made up of:

(*a.*) Intrinsic ganglionic cells (gray matter).

(*b.*) Centrifugal cerebral axons (white matter of motor columns).

(*c.*) Centripetal sensory axons from the spinal ganglia in which is located the trophic cell of the body of these axons, making up the posterior sensory column. The centripetal and centrifugal axons within the spinal cord are aneurilemmic.

(*d.*) Intercommunicating or associating axons which connect the various segments of the intrinsic ganglionic cells of the cord, and form the anterior ground bundle of white fibers.

(*e.*) Direct cerebellar centripetal axons originate from ganglionic cells situated in the posterior internal region or posterior horn and close to the commissure, leading to the ganglionic cells situated in the vermis superior of the cerebellum and are aneurilemmic (tract of equilibrium).

(*f.*) Gowers' or the lateral spinal tract, the axons of which originate in the posterior horn, close to the commissure.

(*g.*) Neuroglia.

(*h.*) The bulb or medulla oblongata is a continuation of the same ganglionic zones of gray matter in the cord and has all of the centrifugal and centripetal axons of the spinal cord. In addition, it has its own peculiar anatomic elements.

Nerves arising from the medulla are surgically spinal nerves. Therefore, all of the "cranial" nerves, except those of special sense, are from a surgical standpoint, essentially spinal nerves. The extracordal motor and sensory axons are medullated and neurilemmic.

(*f.*) Nerves of special sense should be called cerebral nerves, as their trophic cell bodies are outside the cranium, and in the organs of special sense. The centripetal axons of these nerves, with the exception of the olfactory, are all medullated and all aneurilemmic.

The extra spinal root, both centrifugal and centripetal sensory, are medullated and neurilemmic. The peripheral nerves of the bulb and cord (cranial and spinal) are medullated and neurilemmic to their nerve endings. The terminal dendrites are medullated and aneurilemmic. They possess, however, a limited potentiality of outgrowth of the axons beyond their neurilemma. The cauda, from a surgical standpoint, is an intradural collection of extramedullary spinal axons, and is made up of axons with a medullary sheath and neurilemma. The sympathetic system is a chain of ganglia and nerve trunks. Their axons are neurilemmic and non-medullated.

When an axon is divided, the entire distal portion from the trophic ganglionic body degenerates; proximally, it degenerates for a short distance, and for a longer distance it atrophies. A ganglion cell once destroyed, the degeneration of its axon, or axons and dendrites is complete, and the restoration and sensation in its peripheral zone can only be obtained by anastomosis of its axons to other axons originating from healthy ganglonic cells, as in anterior poliomyelitis.

Ganglionic cells and aneurilemmic axons once destroyed never regenerate. All neurilemmic axons, centrifugal (motor), and centripetal (sensory), are capable or potent of both anatomic and physiologic regeneration under favorable conditions. For the rôle played by the neurilemma in nerve regeneration the reader is referred to the article on regeneration of peripheral nerves.[1] Therefore,

(*a*) Ganglionic cells in the gray matter of the cord never regenerate. (*b*) Centrifugal motor axons within the cord never regenerate, as they are aneurilemmic. (*c*) Centripetal sensory axons within the cord never regenerate, as they are aneurilemmic.

It can, therefore, be seen that there is no regeneration of the white columns or gray matter of the cord after destruction or division; it has never been demonstrated experimentally nor authoritatively observed clinically. All these principles apply equally to the bulb or medulla oblongata. The spinal, cranial, sensory and sympathetic ganglions once destroyed never regenerate. The caudal portion of the cord is made up of neurilemmic centrifugal axons from the spinal cord ganglion cells, in the conus, and of centripetal sensory axons from cells in the spinal ganglia, which are situated extra dural in the lumbar and sacral foramina, both are neurilemmic, from the place they leave or enter the conus. They are, therefore, all capable of regeneration, the same as peripheral axons.

The extracordal or extramedullary and extrabulbous spinal and cranial axons are neurilemmic and potent of regeneration. Therefore, divided roots within the cranium and spinal canal regenerate. Peripheral nerves, cranial and cerebral, are composed of neurilemmic axons and capable of regeneration. The nerves of special sense, the optic, olfactory, gustatory and auditory, are composed of aneurilemmic axons, and are incapable of regeneration if once destroyed. In this particular, they resemble the columns of the cord. Their trophic cells are situated in the retina, Schneiderian mucosa, taste organs, cochlea and vestibule. When these membranes and ganglion cells are destroyed, the cells and axons are incapable of regeneration. The sympathetic nerve trunks are non-medullated, but neurilemmic and capable of regeneration.

Hemorrhage, concussion and contusion without laceration may offer the same immediate symptomatic picture as that of division, and a positive differential diagnosis may be practically impossible.

There is no direct relationship betwen the severity of the trauma and the degree of lesion in the cord. The element of time and the order of appearance of symptoms is of great importance, and may be the only guide in the differential diagnosis.

Absence of paralytic symptoms immediately after spinal trauma does not justify the surgeon in assuring the patient that such symptoms will not appear. They may set in within a few days or even some weeks after the injury.

If paralysis is due to hematorrachis the condition can be relieved by early spinal puncture. Intra or periarachnoidal hemorrhage from bullet or stab wound may produce complete paralysis resembling a division of the cord. If the pressure be relieved the patient will survive and paralysis will be temporary.

The majority of cases of transverse or incomplete traumatic irregular paralysis following fractures recovers without operative treatment, which signifies an absence of spinal cord division. Wherever there is immediate and complete circular paralysis, operation does not benefit the patient in the least, as there has been a division of spinal axons which never regenerate.

Surgical intervention in injuries to the cord should be resorted to only in cases where the spinal cord is not completely divided, except in the caudal zone. Immediate intervention will be of benefit when the cord is compressed above the cauda, or compressed and divided in the cauda. If operation is at all indicated there is no reason for delay, as degeneration changes may take place in the cells and neurons of the cord, which would be as irreparable as its division.

In fractures of the spine without considerable dis-

placement, we are justified in assuming that the cord is not suffering continual compression, regardless of the degree of paralysis, and operation is contraindicated. If this paralysis is due to laceration, it will not be improved by operation. If it is due to contusion it will recover without operation.

In gunshot and stab wounds with immediate paralysis, operation is contraindicated, as the cord is probably severed, and its re-approximation will avail nothing, except in the caudal zone. After division or crushing of the nerves of the caudal zone, there is a positive indication for an end-to-end suture, axonal contact of the various fibers, as determined by faradic stimulation, the same as in peripheral nerves.

In spina bifida centralis paralytica, in the caudal zone, resection of the atrophied section of the spinal cord with end-to-end union is indicated. Apendymal spina bifida should be treated by resection of compressed segments, and accurate suture approximation of the fasciculi of the cauda. Upper ependymal and true cord central spina bifida may be treated by ependymal subarachnoidal drainage.

In all non-malignant tumors of the cord, laminectomy should be performed at the onset of paresis. Delay to complete paralysis is unpardonable, not to use a more forcible expression. Operation after complete paralysis from compression with degeneration is contraindicated.

In tuberculoma compression the spinal cord operations should be done at the beginning of symptoms of paralysis. Late operations, that is, after a pressure necrosis of the cord, are worthless. The bone cavity should be filled with a Moorhof plug, as this lessens the liability of suppuration and hastens the process of repair.

In conclusion, surgery of the spinal cord, like surgery of other parts of the body, must be timely, i. e., operation must be done before the pathologic condition is advanced beyond the possibility of repair. In our present positive, though limited knowledge, timely action means conservatism, while delay must be interpreted as timidity and inefficiency.

I wish to express my appreciation of the services of Dr. Victor F. Schrager in the preparation of this article.

[FOR THE DISCUSSION ON THE PAPERS OF DRS. POWERS AND MURPHY, SEE PAGE 826.]

A CASE OF COLON BACILLUS SEPTICEMIA.*

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Nov. 2, 1905, Dr. G. W. Wende, Buffalo, referred to me a man with the following history, whom he had been treating for syphilis:

Patient.—I. A. K., jeweler, single, aged 38, American, with a good family history.

Personal History.—The man had had measles several times, typhoid in 1892 and diphtheria in 1896 and 1897. In 1888 he had a chancre, and in 1903 syphilitic rhinitis of mild type. For this he has been under treatment. While under my care, he was seen in consultation by Drs. Conrad Diehl, Chas. G. Stockton, G. W. Wende and Nelson G. Russell. Three weeks before consulting me he had had a severe wetting and had taken cold. A week later began to have night sweats, which continued nearly every night. Sweats occurred early in the night. The night before I saw him, he had had two sweats—one early in the night, the other early in the morning. He slept well except for the sweats. He had no headaches. Appetite was good, no indigestion; bowels were constipated, especially during the last few days. There was no cough or expectoration. He was not short of breath; had no palpitation of heart.

Physical Examination.—Patient appeared pale with slightly yellowish tint; face was a little puffy. Tongue was clean. The heart apex was in the nipple line, at fifth interspace; sounds were both weak. There was no other abnormality. Pulse was 88, of moderate volume and regular tension. Temperature was 100.5 F. His weight was 160 pounds, a little below the average.

Lungs: There was very poor expansion, but no abnormality otherwise to be demonstrated.

Abdomen: Liver was enlarged and slightly tender. Spleen was of normal size. Abdomen was generally normal.

Urine: 500 c.c., strongly acid, specific gravity 1029. Urea 14.8 gm. Albumin none, sugar none, indican excess, bile trace, diazo reaction, negative, no blood. Microscope showed only urates.

Blood: Hemoglobin, 75 per cent.; red cells, 4,500,000; white cells, 3,800. Widal reaction negative; no malarial organisms found.

Diagnosis and Treatment.—There was doubt in my mind as to whether the case was one of syphilitic fever, general tuberculosis or typhoid fever. I inclined to the opinion that it was one of tuberculosis. The man was put to bed, his emunctories opened by a dose of calomel, followed by salts, alkaline drinks, and an afternoon tepid sponge. An antiseptic cleansing mouth wash was used frequently, and a bowel wash of boric acid and ichthyol in warm water was given every other day. A diet was ordered of milk, broth, raw egg and beef juice. Medicine: Guaiacol benzoate 1 gm. (gr. xv) every four hours.

Course of Disease.—The temperature chart is shown. Until the last week of his life, the man's pulse varied from 70 to 80, and respirations from 20 to 24. On November 8, the spleen was noted as enlarged and palpable.

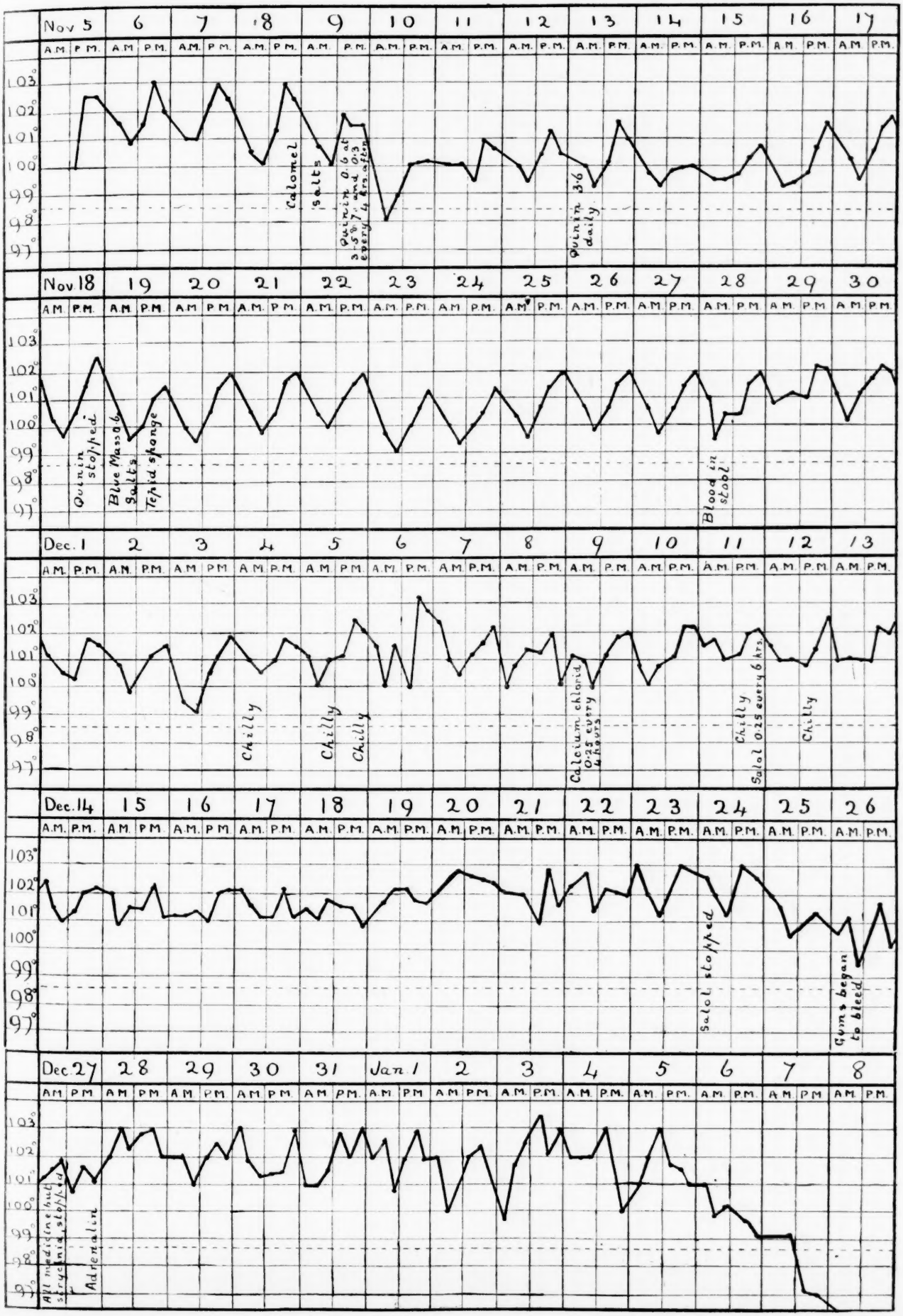
The urine was examined frequently in the course of the disease, and only toward the end did it show any albumin. At no time was bile present after the first examination. The blood counts showed a slowly, but steadily, increasing anemia of slightly chlorotic type, and a remarkable leucopenia, the white cells never being above 3,800, a week before his death, falling as low as 1,340, the different forms bearing a normal percentage relation to each other. The last count showed 2,670,000 red cells, poikilocytes, microcytes, macrocytes, and a few polychromatic red cells. No nucleated red cells at any time.

Although no malarial organisms had been found in his blood, as he had a very regular afternoon rise and morning fall of temperature associated with sweating, his guaiacol was stopped November 8 and he was given a full dose of calomel, followed by salts, and on November 9, was given quinin, 0.6 gm. (gr. x) at 3, 5 and 7 p. m., and then 0.3 gm. (gr. v) every 4 hours afterward. His temperature dropped to 98 F. and stayed below 100 F. for 24 hours, when, in spite of the continued administration of quinin, it began its up-and-down course again, so that on November 13, the 0.6 gm. was given at 6, 8 and 10 p. m., and the next day at 12 m., and 2 and 4 p. m., and afterward continued at 4, 8 and 12 a. m. and p. m. Under this dosage, the temperature remained below 100 F. for 24 hours only, and then again began its up-and-down course, so that by November 18 its range was between 99.2 and 101.8 F. Quinin was then abandoned.

November 30, at Dr. Stockton's suggestion, blood was taken for culture purpose. Drs. Nelson G. Russell and C. A. Bentz made the blood studies. At no time did the patient's blood stop the motion or cause clumping of typhoid bacilli.

Cultures from the blood taken at this time gave short motile bacilli, which did not react to the agglutination test with known typhoid blood, and did react with the patient's own blood. The bacilli at first did not have the characteristics of the colon bacillus, and it was concluded that we had to do with a paratyphoid septicemia. Under subsequent cultivation the organs developed the characteristics of the *Bacillus coli communis*.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.


Nov 5 6 7 8 9 10 11 12 13 14 15 16 17
A.M. P.M.
103° 102° 101° 100° 99° 98° 97°
Calomel
salts
Quinin 0.6 at 3.5 P.M. and 0.3 every 4 hrs after
Quinin 3.6 daily
Nov 18 19 20 21 22 23 24 25 26 27 28 29 30
Quinin stopped
Blue Mass 0.6
Salts
Tepid sponge
Blood in stool
Dec. 1 2 3 4 5 6 7 8 9 10 11 12 13
Chilly
Chilly
Chilly
Calcium chlorid 0.25 every 4 hours
Chilly
Salol 0.25 every 6 hrs
Chilly
Dec. 14 15 16 17 18 19 20 21 22 23 24 25 26
Salol stopped
Gums began to bleed
Dec 27 28 29 30 31 Jan 1 2 3 4 5 6 7 8
All medicine but strychnia stopped
Adrenalin

November 28: Blood appeared in the patient's stool and afterward proved constantly present by the guaiac test, and could occasionally be detected by the naked eye.

From the beginning it had been difficult to keep the man's tongue and gums clean, there being a great tendency to formation of sordes. December 26 his gums began to bleed, and, in spite of careful local treatment, in which a most competent dentist was associated, a terrific hemorrhage occurred on December 31, from which the patient did not rally, but steadily sank until his death, at 4 a. m. January 8.

There are one or two things in the course of this case that I think are worthy of emphasis. The first is that the character of the temperature curve, with the occurrence of sweats, the enlargement of spleen, the anemia and leucopenia, very strongly suggested malaria of an estivo-autumnal type. The study of the blood did not reveal the plasmodium, and the therapeutic test with quinin was a failure. From November 28, when blood first appeared in the patient's stool, calcium chlorid was administered regularly in full doses until the man died with profuse hemorrhage from the mucous membrane of the mouth. The local use of adrenalin had only a very temporary effect in the attempt to control the hemorrhage.

In the second week in December, on account of the pronounced leucopenia, yeast and, later, Vaughan's nuclein, and finally cinnamate of sodium were administered and the leucocytes continued to drop in number.

The patient complained of no pain at any time during his illness, nor was there any tenderness anywhere, except very slight tenderness over the liver. The only anatomic abnormality which could be demonstrated during life was the slight enlargement of liver and spleen. The man's mind remained clear, and he was cheerful up to ten days before his death, when the bleeding from his mouth began to be severe.

REPORT OF AUTOPSY.

The autopsy was performed seven hours after death by N. G. Russell and C. A. Bentz. Dr. Conrad Diehl was present.

External Appearance.—Usual postmortem lividity; rigor mortis, moderate; body considerably emaciated; skin, yellowish tint.

Lungs: Left lung crepitated, except at the base. The posterior part was intensely congested, somewhat friable, on section exuded considerable bloody froth. Right lung was somewhat heavier than normal, the upper and middle lobes were emphysematous. The lower lobe was large, dark in color, quite friable, did not crepitate; on section exuded bloody serum.

Heart: Small, pale; muscle was about normal thickness, ¾ inch, of a brownish-gray color, soft, friable and flabby. The muscle of the right side was thin; in some places it was almost entirely replaced by fat. The valves appeared normal.

Aorta and Blood Vessels: Moderately sclerosed.

Suprarenal Glands: Normal.

Kidneys: Left kidney was large (swollen), pale, capsule stripped easily. Cortex was somewhat narrow, the blood vessels and medullary rays were distinct. The right kidney was the same as the left. The ureters appeared normal.

Spleen: Large, soft, friable. Malpighian bodies and trabeculæ were not distinct.

Gall Bladder: Small, thickened and filled with thick, dark green bile. No calculi in either ducts or bladder.

Liver: Size about normal, pale, yellowish color and firm.

Lymph Nodes: Mesenteric, peribronchial and thoracic, lymph nodes were large, reddish in color and soft.

Intestines: The lower part of the ileum and the cecum showed congestion of the mucous membrane. The solitary follicles and Peyer's patches were somewhat swollen, but not ulcerated.

Smears and cultures were made from the spleen, lymph nodes, liver and heart blood.

Pieces of tissue from the spleen, liver, kidneys, lungs, pancreas, lymph nodes, intestines and heart were preserved in hardening fluid.

Histologic Examination.—The tissues were hardened in Orth's fluid, embedded in collodion, sectioned and stained with hematoxylin and eosin. The following is a brief summary of the findings:

Lungs: Hypostatic pneumonia of the lower right lobe and posterior border of the left lung. Emphysema of the anterior and middle lobes of right lung.

Kidneys: Parenchymatous nephritis.

Heart: Fatty infiltration.

Spleen: Congested.

Liver: Fatty and cirrhotic.

Lymph Nodes: Medullary infiltration and some hyaline degeneration.

Gall Bladder: Thickened.

Bacteriologic Examination.—Cultures from the organs and tissues gave short motile bacilli, having the structural and morphologic characteristics of *Bacillus coli communis.* The organisms isolated from the blood during life (November 30, 1905) had the same cultural and morphologic characteristics as those isolated from the organs and tissues at autopsy. The agglutination (blood) test was positive with both sets of cultures.

Summary.—The man had a septicemia due to an organism belonging to the *Bacillus coli communis* group. This organism in the beginning did not have the characteristics of *Bacillus coli communis,* but under subsequent cultivation developed them. The organs and tissues presented the gross lesions of septicemia.

BERIBERI, ITS ETIOLOGY AND PREVENTION.*

LOUIS H. FALES, M.D.

MADISON, WIS.

Beriberi being a disease more particularly of the tropics and rarely seen in America, it may be well at the beginning of this paper to give a short description of the disease, so that those who are unfamiliar with its manifestations may bear in mind a picture of its principal characteristics.

PATHOLOGY.

Beriberi may be described as an acute or subacute infectious disease occurring endemically or epidemically usually in tropical countries. Its chief characteristic is a sensory-motor paralysis due to an involvement of the peripheral terminations of the sensory and motor nerves. The peripheral terminations are usually affected in the following order: The terminations of the vagus in the heart and lungs, the cardiac accelerator, those which have to do with the knee jerk, the branches of the peronei and anterior tibial, the muscles of leg and thigh, the extensors of the wrists and fingers, etc. After an incubation period of from 7 to 21 days, the patient begins to complain of malaise, loss of appetite, weakness, and pain in the lower part of the chest or the epigastrium. Vomiting may occur and sometimes diarrhea.

To a physician who is a novice as to beriberi, the foregoing symptoms would only indicate an attack of acute indigestion; to the physician who is acquainted with beriberi, and especially if the disease is prevalent, they would be very suggestive. The symptoms resembling acute indigestion are soon followed by sensations of feverishness, or chilliness, although there is no pyrexia. The uneasiness in the epigastrium soon becomes a dull heavy boring pain and is accompanied by distention of the epigastrium. The pulse becomes greatly accelerated

* Read before the Central Wisconsin Medical Association, July 31, 1906.

and if the patient exercises only slightly, dyspnea is usually observed. In from a few hours to two or three days more pronounced nervous symptoms begin to appear. The knee-jerk is found to be absent, although it is occasionally exaggerated. Patient complains that his legs feel heavy. On walking the foot flops to the ground at each step, showing that the anterior tibial and peronei have become involved. Areas of anesthesia appear. The paralysis spreads rapidly upward to the thigh, hips, fingers, arms, etc. Edema may soon appear, beginning in the legs, depending on the implication of the vasomotor fibers of the vessels of these areas. There may be tenderness on pressure over the affected areas. The nerves of the circulatory and respiratory systems become more markedly involved. The heart becomes more irritable and palpitation occurs on the slightest exertion, with a weak and rapid pulse. The respiration becomes hurried even when at rest. Pulsation over the precordia and carotids becomes pronounced. The area of cardiac dulness increases toward the right. The cardiac impulse becomes diffuse. Signs of engorgement soon appear. Lips and finger nails become blue. There is marked dyspnea. Patient gasps for breath. The face shows great anxiety. Temperature becomes subnormal. Patient succumbs to cardiac or respiratory failure. The mind is clear to the end. This description corresponds to the usual subacute variety.

There is a pernicious form, however, the symptoms of which vary considerably from the foregoing. Loss of appetite, malaise, pain in the epigastrium, etc., may usher in the attack as in the subacute cases, but the peripheral terminations to the vagi in the stomach and heart become so rapidly involved that the patient dies often within a few hours, before other symptoms as peripheral paresis and edema appear. There are other forms of this disease, as the atrophic or paralytic, and rudimentary forms, but time will not allow a description of these in the limits of this paper. This description, however, will be sufficient to make what follows more comprehensive.

SERIOUS CHARACTER OF BERIBERI.

The importance of the prevention of beriberi, especially in the tropics, is forcibly demonstrated by the following facts:

Prior to 1884, an average of 33 per cent. of the available strength of the Japanese navy was continuously disabled on account of beriberi. During the war with China in 1894, 45 per cent. of the Japanese army were made non-efficient for the firing line on account of beriberi. Finally, in 1904 and 1905, in the Japanese army, nearly one-half of the sickness, or 24 per cent. of the entire sick and wounded, consisted of those ill with beriberi, amounting in round numbers to nearly 85,000 men.

This disease must not only be reckoned with in military movements in the tropics, but is also a factor determining to a great measure the success of many public and private undertakings. In the mines of the Federated Malay States a large percentage of the contract laborers are almost continuously disabled on account of beriberi. In Java many of the laborers are likewise disabled and in the Philippines, during the construction of the Benguet road to Baguio, the ranks of the laborers were considerably decimated on account of the same insidious disease.

THEORIES AS TO ETIOLOGY.

On looking over the voluminous literature of beriberi, I am struck with the diversity of opinions and theories advanced as to the cause of this disease and its prevention.

The most important theories promulgated as to the etiology of beriberi are:

1. That beriberi depends on the nutritive value of food.

(*a*) Kakaki claims to have banished beriberi from the Japanese navy by increasing the proportion of nitrogen in the ration. During a period before Kakaki's changes, about one-third of the entire strength of the navy, became affected during the year, while after the change 1/63 were affected by the disease.

(*b*) Several French authorities believe that beriberi is due to a scarcity of fat. It is claimed that an extensive epidemic of the disease at Chaudabun, Siam, was arrested by the increase of fat to the ration.

2. That beriberi is caused by a toxic agent taken in with the food has many advocates. Gelpke believes the toxic agent to be dried fish; Muira, raw fish; Grimm, infected fish; others that the toxin develops in moldly rice.

3. Carbon dioxid. Ashmead[1] has written several articles trying to prove that the excessive inhalation of CO_2 is the cause of beriberi.

4. That beriberi is due to an infection by protozoa. Glogner and Heanley advocate this theory. Heanley[2] draws an analogy between malaria and beriberi which is suggestive.

5. The arsenical poison theory is strongly advocated by Ross.[3] He believes that beriberi is a neuritis caused by the ingestion of arsenic.

6. That beriberi is caused by a specific germ, probably bacterial, has many advocates. There is great diversity of opinion, however, as to how the micro-organism enters the body or whether it enters the body at all.

(*a*) Manson[4] believes that the organism exists in some culture media outside the body, that the toxin which produces the disease enters the body not in the food or drink, but through the skin or by inhalation.

(*b*) Pekelharing and Winkler[5] believe that a germ is introduced in the body but that the bacterium to produce the disease must be introduced by repeated infections.

(*c*) According to Braddon beriberi is due to the ingestion of a specific germ which develops in growing rice.

(*d*) Hamilton Wright[6] maintains that the specific micro-organism is not a special habitat of any particular food, but that it may be ingested with contaminated food or drink. Having gained access by way of the alimentary canal, it becomes localized in the mucosa of the stomach and intestines. There it elaborates an extracellular toxin which, being absorbed, produces the symptoms of beriberi.

BACTERIOLOGY.

Several authorities have described a specific micro-organism as the cause of beriberi. Pekelharing and Wenkler[5] describe a white staphylococcus, which they

1. "Contribution to the Etiology of Beriberi," Univ. Med. Mag., Phila., 1892-3, v, p. 153.
2. "Some Analogies which Favor the Protozoal Hypothesis of Beriberi," Indian Med. Gaz., Calcutta, 1905, xl, pp. 212-214.
3. "Arsenic in the Hair of Beriberi Patients from Penang," Brit. Med. Jour., 1902, i, 329.
4. "Prophylaxis and Treatment of Beriberi," Brit. Med. Jour., Lond., 1902, ii, p. 830.
5. Mittheil. über d. Beriberi, Deutsch. Med. Wochschr., Berlin, 1887, xiii.
6. "Enquiry into the Etiology and Pathology of Beriberi," Jour. Trop. Med., Lond., 1905, viii, pp. 161, 180, 197, 209.

claimed to have isolated from the blood of beriberi patients. Hunter[7] describes an organism which resembles very closely that described by Pekelharing and Winkler. Ross[8] describes an angular diplobacillus which he claims to have isolated from the blood and cerebrospinal fluid of a large number of beriberi cases.

Okato and Kokubo have recently reported the finding of a coccus in the blood and urine of beriberi patients. Out of 129 cases examined, 65 were positive, both as to cover-glass examinations and cultures. In 34 both were negative. In 11 the microscopic examination alone was positive. In 19 the cultures were positive and the microscopic examination negative.

None of the above work has been confirmed, but the kakkecoccus of Okato and Kokubo has been reported too recently to make it certain whether or not the true micro-organism of beriberi has been discovered. Herzog,[8] in experimenting with this coccus in Manila has, according to the last reports, come to no positive conclusions.

According to this résumé the older authorities placed great stress on food as a factor in causing beriberi while more recent writers are inclined to disregard food entirely and to consider beriberi only in the light of a disease caused by a specific micro-organism. After an extensive study of the disease in the Philippines and a careful consideration of the literature I believe that the pendulum has swung too far and that food must still be considered in determining the etiology of the disease.

How can Wright[6] and Manson[4] sweep aside the experience of so many able men who have suppressed beriberi by certain changes in the diet? Was Takaki's triumph in eradicating beriberi from the Japanese navy, a feat considered one of the greatest successes in preventive medicine of modern times, only a coincidence? Can Manson or Wright cite such an overwhelming success in the suppression of beriberi by carrying out their theories? Wright[9] claims to have eradicated beriberi from the Kuala Lumpur gaol by instituting certain hygienic reforms, as the frequent disinfection of the prison, the better care of fecal discharges, better ventilation, etc., but Travers,[10] writing some months after Wright's report, denies that Wright's reforms were carried out and that the suppression of beriberi was due to other causes.

BERIBERI IN BILIBID PRISON, MANILA, P. I.

This report, based on the epidemic of beriberi which occurred in Bilibid prison, Manila, during which there were 5,448 cases of the disease, is written for the purpose of showing that food as a factor can not be eliminated in determining its etiology.

Bilibid prison is the penitentiary for the entire Philippine archipelago, and also served as the city jail. At the time of which I write, the number of prisoners ranged from 1,700 to 2,000. The prisoners consisted mostly of the several Christian tribes of the islands, but the Moros, Igorrotes and Negritoes were also represented. Among the prisoners were also found Spaniards, Chinese, Japanese, Indians, American negroes, Americans and Europeans. The officers of the prison were a warden, two assistant wardens, and an attending physician. The warden was supreme in all matters. The physician, although having charge of the sick, had only advisory power in regard to sanitary matters, rations, etc.[11]

Previous to the epidemic of beriberi, which started in December, 1901, there had been but few cases in the prison. For some months there had been no deaths from this cause, but the disease might be said to be endemic, for it was seldom there were not one or two cases. In December it was noticed that a great many prisoners began to complain of pain in the epigastrium, loss of appetite, and malaise. It was first thought that the new ration, which had recently been instituted, was causing indigestion. When, however, symptoms of heart and respiratory failure with paresis began to appear, the affection was soon recognized. The disease did not seem to make its appearance in any special portion of the prison, but all parts seemed to be affected simultaneously.

In regard to race, the Filipinos suffered most severely. The Chinese were almost exempt, only one or two contracting the disease, while the Americans were entirely immune.

The epidemic spread rapidly. While in December there were in the prison 52 cases of beriberi, with 2 deaths, in January there were 167 cases with 12 deaths.

To determine the cause of the epidemic and institute preventive measures was now the problem. Was the sudden appearance of this epidemic due to insanitary conditions, as overcrowding; had some new source of infection suddenly gained entrance into the prison; was it due to meteorologic conditions; had the recent change of ration been the determining cause? These questions and others presented themselves for solution.

The first measures tried for the suppression of the epidemic were along the lines of sanitation and disinfection. To begin with, all beriberi cases were, on the first manifestation of the disease, transferred to certain quarters set aside for beriberi. Overcrowding was remedied as much as the available room would permit. The entire prison was disinfected several times and certain portions many times. Platforms, floors and walls in all the buildings were scrubbed or sprayed with carbolic acid or 1/1,000 solution of bichlorid. The prisoners' blankets, mats, and everything belonging to them were soaked in a solution of 5 per cent. carbolic acid and then dried in the sun. Before returning to their quarters the clothing of the prisoners was removed, each prisoner given a full bath with 1/2,000 bichlorid solution, after which fresh clothing was provided. The buildings and quarters, clothing, bedding and prisoners were not only disinfected, but a large portion of the prison grounds was drenched with a saturated solution of chlorid of lime. To avoid possible infection of contaminated hands and dishes, immediately before eating each prisoner washed his hands and dish in water, bichlorid solution 1/1,000, and then in water. This routine of disinfection was continued several months, but in spite of it

7. Hunter, W. K.: "Bacteriology of Beriberi," Glasgow Med. Jour., 1897, xlviii, p. 116.

8. "Beriberi in the Japanese Army During the Late War. The Kakkecoccus of Okata-Kokubo," Philippine Jour. of Sci., February, 1906.

9. Wright, H.: "Successful Application of Preventive Measures Against Beriberi," Jour. Hyg., Cambridge, 1905, v, pp. 129, 133.

10. Relating to the paper entitled "The Successful Application of Preventive Measures Against Beriberi," by H. Wright, Jour. Hyg., Cambridge, 1905, v, pp. 556-539.

11. The same defects exist in regard to the powers of physicians in the Philippine Civil Service as exist in the Army. In all departments physicians have over them those higher in authority who are not physicians. The physicians may suggest, but their suggestions and recommendations are often not complied with. It was unfortunate that during the epidemic of beriberi in Bilibid Prison the physician was greatly handicapped by the fact that recommendations in regard to food and sanitation were often turned down by the warden.

and other sanitary measures employed, beriberi did not abate, and at times seemed even to increase.[12]

The result of the above experimentation shows that at least the epidemic in Bilibid was not due solely to a place infection as advocated by Manson, for: 1. The most thorough disinfection had no effect in reducing the number of cases. 2. A change in location of the prisoners was not necessary to bring the epidemic to an end. For some months previous to December, when the epidemic began to wane, there had been no disinfection.

Overcrowding had little or no effect on beriberi in Bilibid prison, for: 1. During the time of the epidemic certain buildings which were the most crowded showed no greater proportion of beriberi cases. 2. Beriberi cases did not diminish when crowding was lessened. 3. About two years after the epidemic had ceased, when the prison contained over 4,000 prisoners instead of 2,000, and was crowded far beyond its capacity, there was no increase of beriberi, although the disease was endemic at the time.

The epidemic could have been due to no new source of infection gaining entrance to the prison, for all portions seemed to simultaneously be affected, although many of the quarters were widely separated. From the chart it is seen that meteorologic conditions had little importance. Hamilton Wright's theory that the infective agent is contained in the excreta of the patients, and that the infection results from fecal contamination, would have been practically impossible during a portion of this epidemic because for several months during its height, the prisoners' hands and dishes were scrubbed and disinfected in a 1/1,000 solution of bichlorid before eating. This was done in July, August and September, months in which beriberi showed no diminution, but rather an increase.

The possibility that the epidemic might in some way be related to the food was early considered and the attending physician had several times recommended to the warden that certain changes in the ration be made. The warden did not think it possible that such a "good ration" could have anything to do with beriberi, so the request was not complied with. Careful observation, however, brought to light a few facts which increased the probability that the ration was to some degree responsible for the epidemic: 1. The entire prison ration had been changed in November. In December the epidemic began. 2. Hospital attendants did not contract the disease. 3. Prisoners who worked in the kitchen very seldom contracted beriberi. 4. During the cholera epidemic there was an increase of beriberi.

In explanation of these facts it was found that in distributing food to patients, hospital attendants often retained more than their share of the vegetables, milk, etc. The same was true of those who worked in the kitchen. They were able to select their diet to a certain extent. As the Filipino is a lover of vegetables, more of these were taken than were given out to the prisoners generally. In regard to the increase of beriberi during the cholera epidemic, it was suggestive that the vegetables had been greatly cut down at that time for fear of bringing more cholera infection into the prison.

In view of the foregoing observations it was again recommended that the ration be changed with the hope that beriberi might be eliminated. The recommendation was finally adopted the following October, and by the last of the month the new ration was instituted. The effect of the change was almost instantaneous. When the change in ration was made the latter part of October, there were in the prison more than 100 cases of beriberi; and during that month there had been 34 deaths from the disease. By the end of December the number of cases had dropped to 14. The number of deaths had decreased to 9 in November and 3 in December. Table 1 demonstrates graphically the relations of the changes of ration to the epidemic. It is clear, therefore, that the appearance and disappearance of the epidemic were coincident with changes in the ration.

TABLE 1.—SHOWING THE MONTHLY NUMBER OF CASES OF BERIBERI WITH DEATHS IN BILIBID PRISON, MANILA, P. I.

Year.	Month.	Cases.	Deaths.
1901	November	2	0
Ration changed:			
1901	December	52	2
1902	January	169	12
1902	February	1087	16
1902	March	576	15
1902	April	327	15
1902	May	310	19
1902	June	451	17
1902	July	233	33
1902	August	571	24
1902	September	522	31
Ration again changed, October 20:			
1902	October	579	34
1902	November	476	8
1902	December	89	3
1903	January 1-15	4	0
		5448	229

After the change of ration, about Dec. 1, 1901, beriberi, which had hitherto been a negligible disease in the prison, began suddenly to increase. Again, after the ration was again changed in October, 1902, beriberi began to decline rapidly, and in a few months the mortality, which during certain months exceeded a yearly mortality of 250 per thousand, declined to almost nothing.

To study better the reason for these results the ration instituted about Dec. 1, 1901, will be compared with the ration substituted the latter part of October, 1902.

TABLE 2.—RATION INSTITUTED ABOUT DEC. 1, 1901, AND CONTINUED TO OCTOBER, 1902, WITH ITS NUTRITIVE VALUE.

Ration.	Albuminates.	Fats.	Starch.	Salts.
Sugar 28.35	....	....	27.35	.14
Bread 151.20	12.09	2.26	74.39	1.96
Rice 453.60	35.43	3.12	377.40	2.26
Beef 226.80	48.52	11.77	....	3.62
Potatoes 85.05*	1.13	.09	11.90	.50
Onions 28.35*	....	....	....	....
Pepper 5	....	....	....	....
Vinegar 10.00	....	....	....	....
Salt 18.00	....	....	....	18.00
Ginger root 28.35	....	....	....	....
Total gm. ..	97.17	17.24	491.04	26.52

* Potatoes and onions have an average of 56.70.

TABLE 3.—RATION SUBSTITUTED IN OCTOBER, 1902, WITH ITS NUTRITIVE VALUE.

Ration.	Albuminates.	Fats.	Starch.	Salts.
Sugar 28.35	....	....	27.35	.14
Bread 302.40	24.18	4.53	148.78	3.93
Rice 255.15	17.71	1.56	18.87	1.13
Beef 226.80	48.52	11.77	....	3.62
Dried fish 56.70	7.08	.85	....	.28
Potatoes 119.07	2.38	.14	25.00	1.19
Onions 102.06	1.84	.50	5.9	.70
Pepper 5	....	....	....	....
Vinegar 10.00	....	....	....	....
Salt 18.00	....	....	....	18.00
Ginger root 28.35	....	....	....	....
Total gm. ..	101.71	19.37	395.73	29.13

12. This disinfection was not done entirely on account of beriberi, but also for the purpose of stamping out an epidemic of Asiatic cholera which had gained a foothold in the prison.

TABLE 4.—NUTRITIVE VALUE OF RATIONS IN TABLES 2 AND 3 COMPARED WITH THAT OF VOIT, WHICH HAS LONG BEEN CONSIDERED STANDARD RATION.

Ration.	Albuminates.	Fats.	Starch	Salts.
Ration previous to October, 1902	97.17	17.24	491.04	26.62
Ration after October, 1902.	101.71	19.37	375.73	29.13
Voit's* ration reduced to Filipino weight, 125 lbs..	94.	45.	400.00	

* Voit's ration, albuminates 118 gm., fats 56 gm., starch 500 gm., is for a man weighing 151 pounds and working nine or ten hours a day. The Filipinos do not average above 125 pounds in weight, about four-fifths of the above average weight. The reduced standard is, therefore, four-fifths of Voit's original standard.

TABLE 5.—COMPARATIVE STUDY OF THE RATIONS AFTER BEING REDUCED TO NITROGEN CARBON AND HYDROGEN AND COMPARED WITH MOLESHOTT'S STANDARD.

Ration.	Nitrogen.	Carbon.	Hydrogen.	Sulphur.	Salts.	Nitrogen as to Carbon.
Ration previous to October, 1902	172.1	4,166.5	61.9	13.2	140.2	1 to 24.2
Ration after October, 1902.	209.8	3,816.2	70.4	17.2	185.8	1 to 13.4
Moleshott's ration reduced to correspond to Filipino weight	256.	3,789.	143.	23.	172.	14.8 1 to 15.*

* 1 to 15 considered to be correct proportion of nitrogen to carbon.

TABLE 6.*—RATION PREVIOUS TO OCTOBER, 1902.

Name.	Grains.	Rubner's Figures.
Proteids	97.17	x 4.8 = 466.41 calories.
Fats	17.24	x 9.5 = 163.41 calories.
Carbohydrates	491.04	x 4. = 1,964.16 calories.
Total calories		2,594.35

TABLE 7.*—RATION PREVIOUS TO OCTOBER, 1902.

Name.	Grains.	Rubner's Figures.
Proteids	101.71	x 4.8 = 488.208 calories.
Fats	19.37	x 9.5 = 184.015 calories.
Carbohydrates	395.73	x 4. = 1,582.92 calories.
Total calories		2,255.143

TABLE 8.*—VOIT'S STANDARD REDUCED TO FILIPINO WEIGHT.

Name.	Grains.	Rubner's Figures.
Proteids	94	x 4.8 = 451.2 calories.
Fats	45	x 9.5 = 427.5 calories.
Carbohydrates	400	x 4. = 1,600. calories.
Total calories		2,478.7

* Tables 6, 7 and 8 show the value of the two rations in calories as compared with the ration of Voit.

FOOD AS A FACTOR IN BERIBERI.

A comparative study of the tables suggests two theories as to the cause of beriberi epidemic:

1. Previous to the change of ration in October the individual daily ration consisted of 172.1 gr. of nitrogen, and 4156.5 gr. of carbon, which is a proportion of 1 of nitrogen to 24.2 of carbon. The ration instituted in October contained 209.8 gr. of nitrogen to 3816.2 gr. of carbon, a proportion of 1 to 13.4.

2. In the ration previous to October the average daily amount of vegetable for each individual was 56.7 gm.; after October the amount was increased to 221.13 gm.

The first theory would point to nitrogen starvation as advocated by Kakaki as the cause of this particular epidemic. The second theory would place beriberi in the same category as scurvy, that is, deficiency in vegetables as the determining cause of the disease.

In 1883 the cruise of the Ryujo, a Japanese warship, brought the beriberi question to a crisis in Japan and led to Kakaki's investigations. In a voyage of 271 days to New Zealand and South America, stopping at the ports of Wellington, Callao, Valparaiso, and Honolulu, 160 cases of beriberi developed out of a crew of 350 men. The year following, at the same season, Kakaki changed the ration and sent the warship Taukuba on the same cruise. The cruise occupied 287 days, the same ports were visited, with the same number of days' stay at each port. During this cruise only 16 cases of beriberi occurred.

The nutritive value of the ration during the first voyage was:

	Grams.
Proteids	109.29
Fats	15.8
Carbohydrates	622.32

The nutritive value of the ration during the second cruise was:

	Grams.
Proteids	196
Fats	43
Carbohydrates	775

Kakaki attributed his success to the increase in the nitrogenous constituents of the second ration over that of the first. It might be well to note that a comparative study of the supplanted diet and the diet ordered by Kakaki shows not only the increase in nitrogenous food as stated above, but also an increase in fresh vegetables. The daily amount of fresh vegetables for each man was increased from 215 gm. to 450 gm.

The question which now confronts us is: What relation has a deficiency of vegetables in the diet of beriberi?

Literature gives us but little on this question. John G. Haggard[13] reports that in New Caledonia water-cress has been found an almost certain cure for beriberi. A study of the epidemic in Bilibid prison seems to favor the lack of fresh vegetables rather than the small proportion of nitrogenous food as the determining cause of beriberi for the following reasons:

1. Those who had access to the preparation of the vegetables and had the opportunity to take more than their share of the same had no beriberi.

2. When the vegetables were almost entirely discontinued for a time as a part of the ration, the mortality from beriberi became higher.

3. Some months after the epidemic had been under control, prisoners from the prison, many of whom had had beriberi, were sent to work on the Benguet road. So many of these were attacked by beriberi that it was found useless to try to use them, and they were returned to the prison.[14] I was unable to obtain their exact ration, but was informed that they were provided scarcely any vegetables.

4. At the time of the epidemic of beriberi in the prison, many of the prisoners suffered with a peculiar form of sickness which we finally decided to be scurvy. The number of these cases exceeded 50. There was gradual loss of strength, the gums became red, spongy and swollen, there were extensive hemorrhages into the muscles, usually into the muscles of the legs. The hemorrhages would be followed by marked induration. The muscles became almost board-like in consistency, and the patient could walk only with great difficulty. On postmortem, hemorrhages were found in various parts of the body. One case of hemopericardium was noted. On the addition of lemons to the diet of these patients, or increasing the vegetables, they recovered. There is no doubt, therefore, that with the epidemic of beriberi we

13. Lancet, 1904.

14. The latency of beriberi is here shown. The majority of these prisoners had had beriberi during the epidemic, which was suppressed by dietetic measures. The lack of fresh vegetables again caused the infection, which had remained latent in the body, to become active. There was comparatively little beriberi among the laborers employed on the Benguet road.

had an epidemic of scurvy, although in much smaller proportion. This, I believe, is very significant.

To recapitulate briefly, we have a change in ration, followed by epidemics of beriberi and scurvy. Certain facts, as stated above, point to a scarcity of vegetables in the ration as a possible cause of the epidemic of beriberi. The determining cause of scurvy has long been recognized to be a deficiency in vegetables. Therefore, it would seem that these two diseases are somewhat similar in their etiology.

The most important anti-scorbutic in vegetables is supposed to be potassium carbonate. A comparative estimate of the potassium carbonate in the rations made by the help of Nothnagel's tables, shows an increase of these salts from 10.34 gr. in the ration previous to the change in October to 17.39 gr. in the new ration, the ration which caused the disappearance of beriberi and scurvy. The fact noted by many writers that beriberi is very prone to occur among these people who make rice their main diet is, I think, explained by the following table:

In one ounce[15] of

	Potassium Carb. Grains.
Large potatoes, boiled	1.875
Small potatoes, raw	1.310
Lime juice	.852
Lemon juice	.846
Unripe oranges	.675
Mutton (raw)	.673
Beef (raw)	.599
Corned beef (sl. salted)	.572
Peas	.529
Beef (salted)	.394
Onions	.333
Wheat bread	.258
Cheese (Dutch)	.230
Wheat flour	.100
Oatmeal	.054
Rice	.010

From this table it is very evident that when rice is made the staple food, there is little opportunity for the ingestion of potash salts. It also explains the disappearance of beriberi when a sufficient amount of vegetables, especially of potatoes, is added to the diet. Accepting the above, how can we explain the appearance of two diseases different in character, but both apparently following a deficiency of potash salts in the ration?

As already stated, beriberi is considered by many as due to a micro-organism. Indeed, it can not be doubted that the pernicious form with its rapid onset and sudden death is due to some acute infection which rapidly produces intoxication of certain vital peripheral nerves.

The acceptance of a micro-organism as its cause in no way interferes with the theory that the ration is the determining cause of the disease. The micro-organism being present, the disease is produced in an individual whose blood is deficient in potassium salts. If the normal amount of potassium salts were present in the individual the micro-organism would not find a suitable medium for its propagation, and the disease would not occur.

Much the same theory may be advanced in regard to the cause of scurvy. Babes has described a bacillus as the cause of scurvy. Rosenell subsequently described a similar bacillus. Following the capture of Port Arthur, Okado and Saito,[16] studying scurvy among the Russian prisoners, described a bacillus which they recognized as the origin of scurvy. The phenomena of this disease produced in animals, by this bacillus, are similar to those of human scurvy.

Is it not, therefore, reasonable to suppose that both in beriberi and scurvy we have a certain condition produced by a deficiency of potash salts, and that this condition causes the organism to be peculiarly susceptible to certain forms of infection? With this susceptibility, and, under certain conditions, as the presence of the proper organism, race, climate, etc., beriberi is produced. Under other conditions the result is scurvy.[17]

15. Nothnagel's "Encyclopedia of Practical Medicine."

16. "First Report on the Etiologic Investigation of Scurvy," Sei-I-Kwai. Med. Jour., Tokio, xxiv, No. 9, xxv, No. 1.

BERIBERI ON THE ISTHMUS OF PANAMA.*

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It is not the purpose of this paper to give any new information on the etiology of beriberi. The subject has been extensively investigated by Pekelharing and Winkler, Manson, Wright and the Japanese school, and germs have been isolated, which, it is claimed, are the cause of the disease. These claims, however, have not been substantiated. Beriberi has been attributed to faulty diet, to various forms of intestinal parasites, to exposure to the elements, and, finally, in absence of definite knowledge, to malaria. The consensus of opinion is that beriberi is a place infection and probably of microbic origin; it is immaterial whether, as Manson states, the germ is located in the soil of infected spots and produces a toxin which gains entrance to the body and causes the symptoms characteristic of the disease, or whether the germ itself gains access to the body and there generates a toxin which produces the disease.

The knowledge gained by the Japanese during the late war toward the prevention of beriberi by the changed dietary proves little or nothing, because, as pointed out by Scheube, late professor of the Medical School at Tokio, so many hygienic reforms were put into effect at the same time, which by themselves would tend to improve the general health. Beriberi attacks persons living in damp, ill-ventilated and overcrowded buildings; in this locality it has been especially noted that it is common among the pearl fishers. With the knowledge gained during the past few years relative to the transmission of disease by the mosquito, is it not extremely probable that this insect plays an important part in the transmission of this disease? To sum up, the causative agent of beriberi has not been determined, nor has the mode of the transmission of the infection been demonstrated.

Beriberi is a specific form of multiple peripheral neuritis, with frequent involvement of the cardiopneumogastric system, the latter manifesting itself by both functional and organic (dilatation of the right side of the heart) disturbances.

17. For other literature on the subject the reader is referred to: Banks, Charles E.: "Scurvy," Reference Handbook of Medical Sciences; Buchanan, W. J.: "Beriberi and Rice," Lancet, Lond., 1898, ii, 577; Chittenden: "Physiologic Economy of Nutrition;" Clark, F.: "Beriberi," Brit. Med. Jour., Lond., i, p. 1152; Dykes, C.: "An Outbreak of Beriberi in an Assam Jail," Indian Med. Gaz., Calcutta, 1904, xxxix, pp. 201-203; Ellis, W. G.: "Contribution to the Pathology of Beriberi"; Lancet, Lond., xi, p. 985; MacLeod; "Beriberi and Food," Brit. Med. Jour., 1897, ii, p. 1459; Morris, H. C. L.: "Etiology of Beriberi," Brit. Med. Jour., Lond., 1897, ii, p. 500; Seaman, L. L.: "The Real Triumph of Japan," Appleton & Co., 1906; Sodre: "Twentieth Century Practice," N. Y., 1898, xiv, p. 469-524; Hunter, W. K.: "A Note on the Etiology of Beriberi," Lancet, Lond., 1898, i, p. 1784; Hutchinson, Robert: "Food and Principles of Dietetics"; Wright, H.: "Outline of Acute Beriberi and Its Residual Paralysis," Rev. Neurol and Psych., Edin., 1905, iii, pp. 645-662; Wright, H.: "Beriberi in Monkeys," Brain, Lond., 1903, xxvi, pp. 488 and 513; Yeo, I. B.: "Food in Health and Disease," Chicago, W. T. Keener & Co.; Reports, Weather Bureau, Manila, 1901-1902.

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TYPES.

The varieties of beriberi on the Isthmus differ in no way from those generally described, namely, 1, the dry, atrophic or paraplegic type; 2, the wet or dropsical type; 3, the mixed forms. It is proposed to give an outline of the symptoms of each of these varieties.

1. The Dry, Atrophic or Paraplegic Type.—Probably the earliest symptoms of beriberi cases is the pain felt in the epigastrium. This is often present for several months before other symptoms appear. The patient first notices a gradual loss of power in the legs, followed by atrophy of the calves of the legs, with loss of sensation over the front of the tibiæ, the sides of the thighs, and very frequently of the finger tips and of areas on the arms. Manipulation of the muscles is painful. Patellar reflex and ankle clonus are usually absent. The gait in these cases is ataxic; there is marked toe-drop, causing the patient when walking to raise the foot a considerable distance above the ground and to bring it down with a characteristic flop. These patients use various sorts of devices to assist themselves in progression, and when walking with a support place as much of their weight as possible on this support. Examination of the cardiac area shows a greater or lesser degree of pericardial effusion; the heart sounds overlap each other; there is a general cardiac irritability; throbbing of the carotids and pulsating movements in the jugular vein.

2. The Wet or Dropsical Type.—In appearance this type differs entirely from the preceding. The face of the patient is puffy and heavy; the lips cyanosed, and the trunk and members of the body are edematous. The urine is scanty and dark colored, of high specific gravity, but in the majority of uncomplicated cases contains no albumin. The edema is firmer than that of nephritis. It may be localized and disappear from day to day. Hydrothorax and hydroperitoneum are frequently present. There is rarely any edema of the scrotum. The heart shows the same conditions as in the atrophic cases. The patellar reflexes are absent and the disturbances of sensation are the same as in the atrophic cases.

3. The Mixed Types.—In this type of case there is some edema, especially of the feet, about the flanks, over the buttocks and sternum and in the region of the neck. The patellar reflexes are absent; there are areas of anesthesia over the tibiæ. The cardiac symptoms are the same as in the types described above. The general health of these patients is not affected. The appetite is good; the tongue clean, and unless there are complications there is no fever.

SYMPTOMATOLOGY.

In reviewing the symptoms of beriberi, the paralyses and atrophy of the voluntary muscles do not play an important part as to the life of the patient. The real danger depends on the amount of involvement of the cardiopneumogastric innervation. Patients who are up and around one day and apparently doing well suddenly collapse and are dead the following day. This is pointed out by Manson as probably due to a chain of circumstances; to degeneration of the heart muscle following nerve destruction; to imperfect systole in consequence of an interrupted nerve supply and to obstruction to capillary circulation in consequence of vasomotor paresis in the pulmonary and in the general circulation. When the dilatation once begins, it tends to increase of its own accord; the more the heart dilates the more difficult it is for it to contract. Finally, the distension is so great that it fails to contract altogether and death is inevitable. Therefore, the prognosis in beriberi should always be guarded, for the case that is apparently mild may suddenly develop serious symptoms.

BERIBERI ON THE ISTHMUS.

The records of physicians who have practiced on the Isthmus for years show that beriberi was unknown here prior to the year 1887. The death registers of the French Canal Company began in January, 1881; those of the city of Panama in November, 1883. There are no records of deaths from beriberi in either of these registers prior to 1887. In that year the canal company imported a number of Chinese and African contract laborers. The first death from beriberi among the canal employés occurred in July, 1887. The first recorded death from beriberi in the city of Panama occurred in December, 1887, five months after the first death among the laborers of the French company. After its first appearance its spread on the Isthmus was rapid, especially among the poorer classes and among the colored races.

The description of beriberi given above refers to the ordinary uncomplicated cases. Almost all the cases which have come under observation in the hospitals on the Isthmus show numerous divergences from the above, due to the multiplicity of complications. A local practitioner of Panama informed me that 450 severe cases of beriberi which he treated began acutely with chills and fever. The fever was of a malarial type and responded promptly to quinin. After the fever subsided and the patients attempted to go about their usual vocations, they showed the typical symptoms of beriberi. As stated above, probably the earliest symptom of beriberi is the epigastric pain. If this is not severe, it would probably not be noticed by the patient unless his attention was afterward called to it by the physician. Hence the opinion prevailing among local practitioners that beriberi is of malarial origin. To illustrate further the complications in beriberics, it is proposed to add a series of cases, taken from the records of Ancon Hospital, giving the clinical histories and pathologic data, and showing beriberi complicated by malarial fever, ankylostomiasis, chronic nephritis of various types and locomotor ataxia.

CASE REPORTS.

CASE 1.—G. M., of Martinique, was admitted to Ancon Hospital Jan. 6, 1906. Patient complained of pains in legs and thighs; of burning sensations in the feet; calves of legs were painful on slightest pressure; patellar reflexes were absent. Albumin was noted in the urine January 25. The patient died Jan. 30, 1906, at 4:10 a. m.

Autopsy—Autopsy at 8 a. m. gave the following findings:

Heart: Right heart considerably dilated. Intestinal tract: Mucosa anemic; no indication of hemorrhage; intestine contained round worms, whip worms, and *Ankylostoma americana*. Kidneys: Enlarged, soft and greatly congested. Spleen: Five times normal size; extremely firm; fibrous elements increased; stroma dark brown color; stained smears show estivo-autumnal parasites. Bone marrow: Estivo-autumnal parasites present.

Comparing the clinical with the pathologic data in this case, the former justified the diagnosis of beriberi, the latter the diagnosis of acute parenchymatous nephritis; of ankylostomiasis and of malarial fever, estivo-autumnal.

CASE 2.—J. T., Barbadian, was admitted to Ancon Hospital Jan. 22, 1906; died Jan. 22, 1906.

Clinical Diagnosis.—Bronchopneumonia.

Pathologic Notes.—All subcutaneous tissues were edematous. Right pleural cavity contained about 200 c.c. amber colored fluid; pulmonary edema marked; pericardium contained about 150 c.c. straw colored fluid. Heart was acutely dilated. Spleen five times normal size; deeply pigmented stroma, with miliary patches scattered uniformly throughout. Smear showed many

pigmented malarial parasites of the estivo-autumnal type. Kidneys acutely congested. Intestinal tract: Ankylostoma and round worms.

Pathologic Diagnosis.—Acute beriberi, estivo-autumnal and malarial fever, and ankylostomiasis.

In this case the clinical symptoms justified the diagnosis of bronchopneumonia; the pathologic, the diagnosis of acute beriberi, malarial fever and ankylostomiasis.

CASE 3.—F. H., Panaman, aged 23, was admitted to Ancon Hospital Nov. 14, 1905; died Nov. 15, 1905, 8:30 p. m.

Clinical Notes.—Illness began with pain in stomach and weakness in legs; patient was unable to walk; there was numbness of legs and hands; ankles were swollen; there was tenderness over tibiæ and thighs; abdomen was tender; morning temperature, 98; evening temperature, 100; pulse, 100 to 124; respiration, 24; ankylostoma ova present.

Pathologic Notes.—Left pleural cavity contained 100 c.c. of fluid; pericardium 50 c.c. of fluid. Kidneys were congested. Intestines: In mid-portion of small intestine were many *Uncinaria americana*, both male and female; duodenum, stomach and remainder of intestinal tract normal. Spleen: Small number of pigmented malarial parasites.

This represents an almost uncomplicated case of beriberi of the dropsical type. The evening temperature of this patient was probably due to the ankylostomiasis, as there were no malarial parasites demonstrable in the peripheral circulation.

CASE 4.—Ancon Hospital. Patient showed patellar reflexes absent; marked pain in the calves of the legs on pressure; general anasarca.

Pathologic Notes.—Hydropericardium; hydrothorax and chronic nephritis.

CASE 5.—W. J., aged 54, Jamaican, on isthmus 20 years, was admitted to Ancon Hospital March 2, 1905; died March 26, 1905. Patient first noticed swelling of feet, which increased rapidly, extending up the legs; there was considerable amount of pain in calves of legs and knees; patient complained of shortness of breath in walking; temperature normal; pulse, 136; respirations, 28 to 36.

Pathologic Notes.—Peritoneal cavity contained about 200 c.c. amber colored fluid; pericardial cavity 60 c.c. amber colored fluid. Kidneys: Right kidney, weight 2 ounces; cortex, 7 m.m.; pyramids pale; capsule stripped with difficulty in places; right kidney as above.

Pathologic Diagnosis.—Chronic diffuse nephritis.

CASE 6.—A. G., Colombian, colored, was admitted to Ancon Hospital Jan. 31, 1905; died Feb. 10, 1905. Illness began one and one-half months prior to admission, with swelling in the feet; there was pain in the muscles of the extremities, difficulty in walking, and dyspnea.

Examination.—Edema of the ankles and feet; apex-beat diffuse; epigastric pulsation with double mitral murmur; pulse 130; great muscular weakness, especially in legs; wasting of calves of legs and thighs; hand grasp weakened; gait ataxic; patient raised legs with difficulty; there was pain on deep pressure of the calves; knee jerk was diminished; there were no anesthetic areas. Urine showed large quantities of albumin; examination of stools showed the presence of ankylostoma.

Diagnosis.—Beriberi and chronic interstitial nephritis.

Pathologic Notes.—Left kidney was very small; capsule adherent in strips; cortex very thin; minute hemorrhage in pelvis; right kidney one-half normal size and same as above. Heart greatly dilated. Stomach, mucosa showed minute pin point hemorrhages; also the first eight inches of duodenum showed marked injection and numerous pin-head elevations, whitish in color. Pin-point hemorrhages were very numerous.

CASE 7.—J. E., aged 46, American, had used alcohol in considerable amounts for a number of years; he denied venereal history. One month ago patient noticed swelling of ankles. This was followed by loss of power in the legs and irritability of the heart when walking rapidly.

Examination.—Patellar reflexes were absent; ankle clonus was absent; there was pain in calves of legs on pressure; slight anesthesia over tibiæ; Romberg symptom was positive; slight incoördination in movements; Argyll-Robertson symptom was negative.

Cases of this character are very often misleading and it is difficult to make diagnoses between incipient locomotor ataxia and beriberi. It is believed, however, that the absence of the Argyll-Robertson pupil would justify the diagnosis of beriberi, which was made in this case. The subsequent history has confirmed the diagnosis of beriberi.

In autopsies which show symptoms of beriberi and of ankylostomiasis, examination of the intestines very often shows in the duodenum around the worm a large red patch about 4 cm. in diameter. This is superficial and might tend to give one an idea of some pathologic condition due to disease and not to the presence of the worm.

In several deaths from acute beriberi the mucous membrane of the stomach and the upper part of the small intestine was found hyperemic and at some places hemorrhagic. One postmortem showed innumerable white spots, the size of a pinhead, scattered over the mucous surface of the duodenum.

TREATMENT.

As the majority of beriberi cases originate in damp, ill-ventilated and overcrowded habitations, the first essential in the treatment is removal from the probable source of infection. Patients should be placed in a dry locality in well-ventilated rooms. It is customary in Panama to send such patients as can afford the expense to the Island of Taboga. The climate of this island, situated 12 miles from Panama in the Bay of Panama, has long been noted for the beneficial results to patients who have had attacks of beriberi and malarial fever. Patients should be well fed, and bulky articles of diet should be eliminated. The medicinal treatment is entirely symptomatic. Digitalis and strophanthus for the heart, with general tonics and massage and electricity are indicated.

ANALYSIS OF CASES.

In examining the records of cases treated in Isthmian Canal hospitals, 112 cases of beriberi are tabulated. Of this number, 106 patients were males and 6 females. There were 14 deaths among those treated. The admissions to hospital occurred as follows:

1904.		1905.	
September	1	June	9
October	2	July	7
November	0	August	8
December	2	September	5
1905.		October	1
January	7	November	21
February	7	December	14
March	6	1906.	
April	5	January	9
May	4	February	4

Ages at admission ranged as follows:

10 to 20	16	50 to 60	8
20 to 30	45	60 to 70	4
30 to 40	24	Not stated	4
40 to 50	11		

The sources of admission were as follows:

City of Panama and vicinity	77	Pedro Miguel	2
City of Colon and vicinity	14	Gorgona	1
Culebra	9	Paraiso	1
Matachin	2	Bohio	1
Empire	3	Bas Obispo	2

The length of time on the Isthmus outside of the cities of Colon and Panama was as follows:

From Culebra: Five patients had been on the Isthmus upward of ten years. The reaining fourm had been on the Isthmus, respectively, one month, two months, and two about five months each.

The Matachin patients, upward of thirty years.

The Empire patients, five months, one and one-half months and two months.

The Pedro Miguel patients, one seven years, the other four months.

The Bas Obispo patients, one sixteen years and one six months.

The Gorgona, Paraiso and Bohio patients, unknown.

Of the above 112 cases treated in the Isthmian Canal Commission hospitals, 64 patients were employés of the Isthmian Canal Commission. Among these 64 there were 10 deaths. The morbidity was greatest in the month of November, 1905, when with a total of 22,000 laborers there were 15 admissions to hospital, giving a morbidity rate of slightly more than 8 per 1,000 per annum. The mortality rate among commission employés was greatest in the month of June, 1905. In this month there were 10,500 laborers on the rolls. Five beriberi patients were admitted to the hospital, of whom 2 died, giving a mortality rate of 2.3 per 1,000 per annum. The reader is referred to the accompanying chart, giving

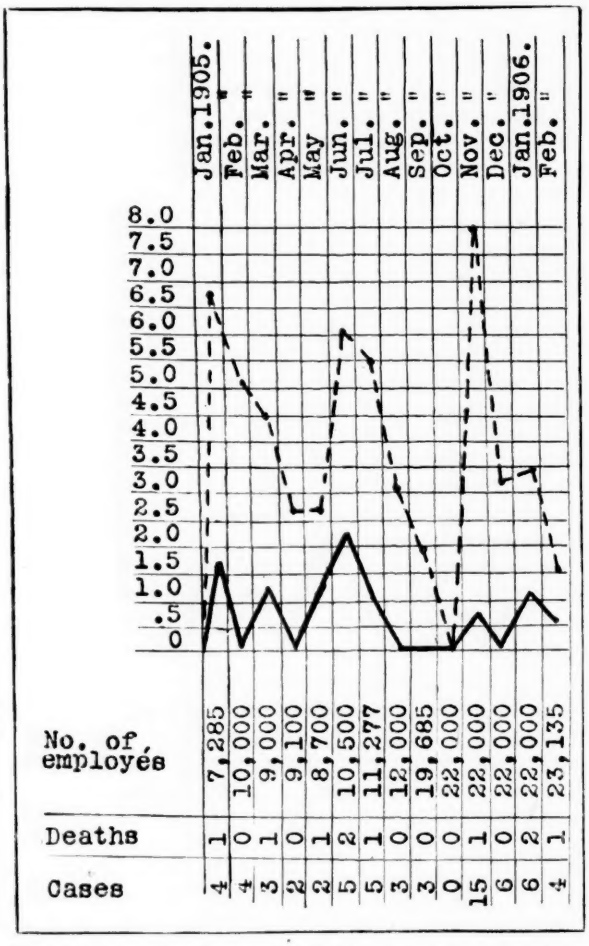

Chart showing morbidity and mortality rate from beriberi among employés of the Isthmian Canal Commission and the Panama Railroad from January, 1905, to February, 1906, inclusive. Solid line shows death rate per 1,000 per annum. Broken line shows morbidity rate per 1,000 per annum.

the morbidity rate and death curves for employés of the Isthmian Canal Commission from January, 1905, to February, 1906, inclusive.

In looking over the records of the French Canal Company it is impossible to find the morbidity rate for beriberi. The mortality rate for the French company in November, 1887, was 22½ per 1,000 per annum. Deaths from beriberi were very rare among the employés of the French company during the years 1890, 1891, 1892, 1893, 1894, 1895 and 1896. In 1897, however, the death rate rose to the alarming figures of 54 per 1,000 per annum. This occurred in the month of May. Comparing this with the mortality rate for yellow fever among the employés of the French company, we find that their highest mortality rate from the latter disease was in 1882, and reached 5.8 per 1,000 per annum, or slightly more than 1/10 that of beriberi. To sum up, the highest death rate from beriberi under the Isthmian Canal Commission has been 2.3 per 1,000 per annum, and under the French company 54 per 1,000 per annum.

Deaths from beriberi in the Isthmian Canal Commission by nationality:

Colombia	18	France	2
Dominica	1	Barbadoes	3
Panama	14	Martinique	6
Jamaica	7	Guadaloupe	1
Africa	1	British Honduras	1
Spain	1	Germany	1
St. Lucia	1	Fortune Island	1
Mexico	3		
Costa Rica	1	Total	64
Grenada	1		

Deaths from beriberi in the French company by nationality:

China	65	America	1
Africa	127	England	2
West Indies	25	France	2
Colombia	7	Belgium	1
Cuba	1		
		Total	231

BERIBERI IN THE CITY OF PANAMA.

As stated before, the first death from beriberi in the city of Panama of which there is record occurred in December, 1887. Since that time there has been no year in which there have not been deaths from this cause. For the past 8 years, however, there has been a decided increase in the number of deaths. It is impossible to compare the mortality rate with the morbidity rate, as these cases have heretofore not been reported. The highest mortality rate occurs with great regularity in the last 3 months of each year, namely, October, November and December. Beginning with the year 1899 the mortality rate has risen from 4.5 per 1,000 per annum to 5 in 1900, 7 in 1902 and 11 in 1903. It dropped to 8.5 in 1904 and again rose to 11 per 1,000 per annum in 1905. There were 559 deaths from beriberi reported in Panama from 1887 to 1905, inclusive, distributed by nationality as follows:

China	114	Chile	1
West Indies	36	Venezuela	1
Colombia (Panama)	368	Nicaragua	1
Mexico	9	Cuba	1
Ecuador	5	America	3
Peru	4	France	3
Costa Rica	4	Spain	2
Salvador	3	Italy	1
Guatemala	2	Sweden	1

As an example of place infection of beriberi in Panama, the Bovedas prison may be cited. The ground floor of this building has been used as a prison for many years. It is built of stone, is poorly ventilated and at times overcrowded. The cases originating in this prison by months are as follows:

BERIBERI IN BOVEDAS PRISON.

Year.	Month.	No. of cases.	No. of prisoners.
1904	April	1	Not known.
	May	0	6
	June	0	23
	July	1	31
	August	1	47
	September	2	53
	October	2	58
	November	2	59
	December	2	77
1905	January	0	67
	February	0	63
	March	3	45
	April	0	49
	May	1	51
	June	4	47
	July	3	67
	August	3	68
	September	1	65
	October	3	59
	November	3	56
	December	0	69
1906	January	0	75
	February	0	75
	March	0	69

Late in October, 1905, the prisoners were transferred

from the prison proper into another portion of the same building, with conditions practically the same as before. Reference to the table above shows that after the first month there were no new cases.

The question naturally arises that with the presence of beriberi in Panama, and the appearance of sporadic cases in the Zone, what are the chances of an outbreak of this disease among the laborers of the commission, the same as occurred under the French régime? It is believed that the improved sanitary conditions, better habitations, the feeding of the laborers by the commission, this insuring a better dietary, and our increased knowledge of the management of tropical disease, will all tend to render an outbreak of this disease improbable.[1]

AN OPERATIVE METHOD FOR THE REDUCTION OF HYPERTROPHY OF THE INFERIOR TURBINATE

OTHER THAN BY CAUTERIZATION OR EXSECTION.*

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If the methods of treatment now in vogue for the reduction of hypertrophy or hyperplasia of the inferior turbinate were wholly free from objectionable features it were then, indeed, superfluous to write aught concerning it. As it is there are so many, and so serious, objections to each method now commonly employed that it may not be misconstrued if an effort be made to advance some suggestion for its relief other than those generally accepted.

Any treatment which primarily gives temporary relief, but whose secondary effects are hurtful, worse, indeed, than the original disease which it is sought to relieve, must be relegated to the rear as soon as another method is brought forward whose primary effect is fully that desired, permanent in nature and followed by no secondary effect whatever except that which is beneficial. If it can be proven that such result is attainable without any extraordinary instrumentation, without violence to the patient, while preserving important functionating tissue now often sacrificed in part or *in toto*, then the writing of another page on so hackneyed a subject is fully justified.

Before a body of rhinologists it is unnecessary to rehearse the several well-known and accepted functions of the nose. In view, however, of the fact that collapse of the alæ nasi so often follows the destruction of the inferior turbinate whether by cautery or by exsection, there must be some physical explanation of the agency by which the patency of the vestibule is maintained. If it were muscular action alone that keeps open the vestibule, then the removal of the inferior turbinate would have no injurious action whatever on it, for there is not any connection that I am aware between the inferior turbinate and the muscles of the alæ.

It is generally conceded that the compressors and dilators of the nasi are very seldom under voluntary control, that they are practically useless structures, unless by patient, long-continued practice they are brought under control of the will, and then only if the inferior turbinate is present. I have followed up this observation as closely as it was possible for me to do and I have never seen a case in which the patient whose turbinates were absent learned after their loss to control the alæ nasi muscles. It is obvious, then, that muscle action has little, if anything, to do with this condition of the vestibule. That the inferior turbinate subserves an important purpose is established by the fact that collapse never occurs when it is present and almost invariably follows its removal.

To be liberal in judgment, it would be well to ascribe the duty of maintaining the patency of the vestibule to the conjoined action of the muscles of the alæ nasi together with the inferior turbinate, the greater influence by far being exerted by the latter structure.

It may be asked why so much importance is urged for this subject. It is because of the lamentable condition, mental and physical, of the victim of total collapse of the alæ nasi, also because a full appreciation of the part the inferior turbinate plays would probably cause a modification of the methods employed for the reduction of its enlargement.

METHODS IN VOGUE.

Thus there are presented for consideration the methods now in practice for the reduction of the hypertrophy or hyperplasia of the inferior turbinate and the question if there be any other way to attain this end.

Cauterization of the enlarged inferior turbinate with chemical caustics is the oldest and perhaps the most generally used. When the electrocautery was first introduced it was adopted with universal enthusiasm; when the street current was adapted to office use it received fresh impetus, and specialist and general practitioner alike attacked everything within the nasal cavity that appeared the least swollen. Nostrils were cauterized until only the cicatricial tissue and the bones were left, the beautiful, moist, velvety red mucous membrane was converted into a white, dry and functionless tissue and untold misery followed this indiscriminate burning.

Now the reaction has fully set in, the indications and contraindications are better understood and more intelligence is used in the employment of this potent agent, while the diffusion of its limitations has caused the general practitioner to fear to employ it with his wonted liberality.

In reality the field of usefulness of the caustics is very limited, as is the frequency and extent of their application. Their full effect can be measured only after the lapse of an indefinite interval, and then this effect, whether injurious or beneficent, is permanent and progressive; should it be hurtful then it is beyond remedy or our power to allay. Better in this connection than to quote the results of the histologic examination made by Dr. J. L. Goodale[1] of Boston can not be done. Dr. Goodale made examinations in a series of cases in which the patients had been previously cauterized for hypertrophy of the inferior turbinate and who had returned later with recurrence of nasal obstruction. Briefly abstracted, his findings are as follows: Caustic applications cause loss of columnar ciliated epithelium with replacement by cells of the squamous type; they may cause obliteration of canaliculi in basement membrane with formation of connective whose depth depends on the intensity of the cauterization. Contraction of this connective tissue constricts the lumen of the ducts of the glands, leading later on to cystic dilatation, thus explaining the recurrence of the obstruction. It follows that repeated applications become progressively less effective.

1. I am indebted to Dr. Samuel T. Darling, pathologist, Ancon Hospital, for valuable pathologic data.

* Presented as candidate's thesis, American Laryngological, Rhinological and Otological Society.

1. Boston Med. and Surg. Jour., 1904, Dec. 29.

We know, too, that the same injurious effects result from the electrocautery. Its action is more profound than that of the strongest chemical caustic. Its action can not by any known means be in any way limited or controlled; hence one may get an effect deep and destructive when only a superficial effect was desired and *vice versa,* or it may progress, defying every effort to control it until actual atrophy results. When a submucous cauterization is done, its action is not only highly intensified, but the ultimate result will be all the more uncertain. It is easy to draw a picture by secondary deduction from this pathologic sequel to cauterization. Thus the destruction of the ciliated epithelium loses to the tissues their ciliary function; the formation and contraction of connective tissue, closing ducts and blood vessels, prevents proper radiation of moisture and heat to the inspired air, at the same time the cystic degeneration of the glands thus cut off from duty later on cause recurrence of nasal obstruction. Loss of function and blood supply entails loss of materials for the regeneration of the injured tissues, and this failure of recovery of the structural bases of the tissue, added to progressive contraction of the new formed connective tissue, gives at the end advancing atrophy.

Notwithstanding all that has been said against it, cauterization has its field of usefulness. When, for instance, there is an excessive, long-continued discharge and the swollen tissue shrinks completely under the influence of cocain and adrenalin; or there exists a rapidly alternating nasal occlusion, especially at night when in bed; when the nasal membranes seem only slightly swollen, when the pathologic condition appears insufficient to give rise to symptoms so distressing, yet the relaxation of the tissues when in the recumbent position is complete and the obstruction troublesome. It is then that cauterization with one of the chemical caustics is indicated. These cases respond quickly and satisfactorily to a moderate caustic treatment when applied by one skilled in its technic. If the reduction is insufficient after one or at most two cauterizations then another method should be considered.

Concerning the electrocautery it would be, indeed, a consummation to be desired if we could all agree with Grayson, who after a severe but well-merited stricture on the use of the electrocautery thus concludes:

> They are luxuries, not necessities, and the longer one pursues his work without them the more likely and able will he be to dispense with them altogether.

That this sentence is not too severe will be conceded by almost anyone who has observed his cases for several—eight or ten—years, who having seen following even after the most careful application progressive contraction and ultimately atrophy must conclude that this agent is too uncertain, too uncontrollable and too severe for the delicate nasal mucous membrane.

That the removal of a portion of the inferior turbinate is at times necessary can not be denied, but that its total ablation is ever justified can not be admitted. Time was when this complete ablation was frequently done, perhaps because it was so easily done, with such simple instruments and because it gave for a time the desired result, viz., a widely open nostril.

Turbinectomy removes a large area of physiologically active tissue and destroys the arch of the inferior turbinate which gives direction to the inspired air current. The mucus secreted is insufficient in quantity to moisten properly the inspired air, the blood supply is insufficient in amount to give the warmth that is so essential to preserve the integrity of the mucous lining of the respiratory tract. Filtration of the air current is impossible. Subsequent contraction aggravates this condition. To a genuine atrophic rhinitis is only one step. Later on in many cases collapse of the alæ nasi occurs, adding to the already existing distress the greater evil of absolute nasal occlusion, especially at a time when nasal respiration is most necessary, viz., in sleep and *per contra* when exercising. This latter condition is so distressing and has been often observed, yet has received no mention by any author to whom I have had access save in the last edition, the fifth, of Lennox Browne. On page 789, in concluding the treatment of hypertrophic rhinitis, he says:

> In some cases of hypertrophic rhinitis as well as in many cases of polypi collapse of the nostrils remains as a more or less permanent cause of trouble after the original malady has been removed. If unremedied all of the former symptoms are liable to recur.

This, so far as it goes, is very good, but one could wish that he had given the physical explanation for so undesirable an occurrence. In my experience collapse has not followed removal of polypi, nor has it ever been seen so long as the inferior turbinate has not been removed. Therefore, it must be supposed that the presence of the inferior turbinate in some way insures the stability of the intranasal air pressure at a sufficient pressure to maintain a patent vestibule. Some time after the complete removal of the inferior turbinate, in one case it developed as early as three months, the alæ begin to collapse. It is noticeable when breathing quickly, as when exercising or in taking deep inhalations, when the flaccid wings collapse, falling in on the septum, completely closing the vestibule like valves, purposely so placed.

The probable explanation of this is that the air within the nostril is evacuated before that from without can gain admittance, resulting in a loss of equilibrium, allowing the greater external pressure to force the flaccid alæ nasi against the septum. There occurs here what takes place when the air in the middle ear is exhausted and when it can not be quickly renewed, viz., collapse of the ear drum against the promontory. Collapse of the wings is seldom seen in cases of atrophy, for here the process is so gradual that ample time is given for gaining compensatory muscle action.

This condition of collapse is far worse than the obstruction caused by hypertrophy of the inferior turbinate. In the latter condition there are times when some air can be gotten through the nasal cavities, viz., when the air is dry or when exercising. These momentary aërations serve to ventilate the accessory sinuses, the Eustachian tubes and to keep the mucous glands somewhat active. There are moments of relief. With collapse, however, the occlusion is complete and permanent, with the entire train of symptoms following in its wake; insufficient aëration of the accessory sinuses with the well-known dangers entailed thereby. The middle-ear catarrh with its tinnitus and its deafness, for which turbinectomy is often done, is undoubtedly aggravated by the absence of any ventilation. In fact, cases have been seen in which the progress to a practical total deafness was noticeably hastened. Also the same mental symptoms of aprosexia have been observed in this condition as in that attendant on occlusion from intranasal hypertrophy. Mouth breathing, with its almost interminable train of distress and associated with the collapsed alæ, so alters the facial expression as to make it appear unnaturally narrow, drawn and pinched, while the voice is usually much changed in tone.

AUTHOR'S METHOD.

Working in view of this importance of preserving these several functions of the inferior turbinate intact, I have for the past six years done an operation simple in itself, but most efficacious in result and permanent in character, with no hurtful sequelæ to mark its performance or mar its record. Only very recently has anything similar been proposed, so far as my reading has informed me. The operation consists in one or more incisions through the mucous membrane of the hypertrophic turbinate well down to the bone, when with a broad nasal saw the bone is cut into to a depth depending on the nature of the bone, whether cancellous or vitreous, which is easily detected by the sensation imparted to the hand. If the bone be hypertrophied and dense the cut is carried well down into its substance. The nostril is next cleansed, the edges of the incised mucous membrane are carefully packed into the osseous cut which, as above indicated has been purposely made with a broad saw to admit of the introduction of the overlapping edges of the soft parts. This adjustment of the tissues is maintained by a carefully placed pledget of cotton saturated in a solution of equal parts of compound tincture of benzoin and flexible collodion. This dressing may remain *in situ* for two or three days when after careful soaking it is as carefully removed. The edges of the incision should not be disturbed when the cotton is removed, else the object of the operation will be defeated. Rarely will repacking be necessary. The direction of the incision will depend on the nature of the enlargement; it may be made from above downward, at the most dependent part of the turbinate upward, or, as is most usually necessary, directly into the body from within outward. It will be found that following this operation much absorption will occur, so that in the course of a short time the nostril will be sufficient for the full performance of its physiologic function.

I have tried the deep incision alone as has been somewhat recently advised, also the removal of a V-shaped section of the mucous membrane side by side with the method I had for so long employed, but it seemed to me that better result was obtained when both the mucous membrane and the bone were included in the incision. The furrow in the bone supplies a base for the attachment of the incised membrane, the firmness of the adhesion preventing the sudden distension so common and troublesome in these hypertrophic conditions.

In conclusion, the advantages of a procedure of this kind over cauterization with either chemicals or electrocautery, as well as the partial or complete turbinectomy, are:

1. Preservation of physiologically active tissues.
2. Freedom from disagreeable reaction or complications.
3. Absence of shock, since but slight local anesthesia is necessary.
4. Freedom from aggravation of existent disease in related cavities.
5. Ease and speed in performance, the instruments used being few and simple.

Medical Organization.—Complete organization of the medical profession, wisely guided and administered, will mean for the people better educated and trained physicians; better and more wisely administered public health and sanitary measures; more careful attention to the protection and the saving of human life.—Philip Mills Jones, M.D., in the *Bull. of Am. Acad. of Med.*

CELLULITIS AND MYOSITIS OF THE ABDOMINAL WALL, SIMULATING INTRA-ABDOMINAL CONDITIONS.

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The cases which follow illustrate very well how closely conditions of the muscular layers of the abdominal wall, accompanied by symptoms most commonly referable to processes inside the abdomen, may be mistaken for the last named conditions.

CASE REPORTS.

CASE 1.—S. S., aged 18, was admitted to the New York Hospital, Dr. Bolton's service, July 21, 1903, complaining of pain on the right side of the abdomen.

History.—Family history negative; past history negative; appetite good; bowels always regular.

Present Illness.—One evening, eight days before admission, the patient ate a large quantity of peanuts, cakes, candy and other Coney Island delicacies. The next morning he awoke with pain in his abdomen. At first the pain was diffuse, but later became localized on the lower right side of the abdomen. It was cramp-like in character, the cramps coming in paroxysms. The pain then disappeared for about three days, and the patient was up and about with only a dull ache in the right side. On the fourth day it returned with greater severity and remained localized on the lower right side, which gradually grew tender to the touch. At the onset the patient vomited, and he has vomited at intervals since, but at no time has the v miting been distressing. The bowels were constipated, but have moved freely by medication. He has had fever, but no definite chill.

Physical Examination.—The patient was evidently in considerable pain. The face was flushed, pulse twenty-six to the quarter, good volume, regular in force and rhythm, temperature, 103.6 F. The heart and lungs were normal. The abdomen was slightly distended. The respiratory movements were limited above the navel and absent below it. On palpation the abdomen was everywhere slightly tender. In the right iliac region there was a hard, readily defined mass, extending from the anterior border of the rectus well into the flank and from the level of a line drawn through the navel down to within one inch of Poupart's ligament. This mass was extremely tender, the slightest pressure causing the patient to wince with pain. In this area there was also marked muscular rigidity. Very gentle percussion over the mass elicited a tympanitic sound. Hernial rings and genitalia were normal, and the rectal examination was negative. The leucocytes were 16,000.

The case was diagnosed as acute appendicitis with the formation of an abscess, and the patient was prepared for immediate operation.

Operation.—An incision 10 cm. long was made over the center of the palpable mass down through the external oblique where a small quantity of serosanguineous, slightly purulent serum was found on the internal oblique muscle which was edematous and rather markedly indurated. On cutting through it considerable edema and induration was found in the subperitoneal tissue, and the peritoneum itself seemed swollen and edematous. The peritoneal cavity was then opened and the intestines, cecum and appendix found to be uninflamed. As the appendix was a very long one, it was removed. The peritoneum was then carefully closed. The muscular and fascial layers were loosely approximated, a drain was inserted in each angle of the wound down to the peritoneum, and the skin closed loosely with silk.

Subsequent History.—The wound discharged a reddish grumous material composed of pus cells and shreds of muscle for about 12 days and the skin wound broke open, the sutures cutting through the skin. This discharge then gradually ceased and the wound rapidly granulated, healing in about four weeks from the time of the operation. The pain disappeared on the second day following the operation. The temperature ranged from 101 to 103 until suppuration ceased and then dropped to normal. The patient's recovery was uneventful.

When he was discharged from the hospital there was no induration nor tenderness in the region of the previously defined mass, and the abdominal wall seemed solid. A culture taken at the time of the operation yielded a pure culture of the *Staphylococcus pyogenes aureus.*

CASE 2.—J. S., aged 19, was admitted to Dr. Bolton's service at the New York Hospital, Aug. 11, 1903, complaining of pain in the lower left side of the abdomen.

History.—Family history was negative; past history was negative except for a little pain occasionally felt in the hypogastrium at the end of micturition. There was no hematuria, increased frequency, etc., and patient denied venereal disease.

Present Illness.—About four weeks before admission the patient had severe cramp-like pains over the whole lower abdomen, which later became localized in the lower left quadrant and remained dull and aching in character. With these pains he had no chill, nor fever. In a few days he was able to be about again with no other symptoms than an occasional dull ache in the lower left abdomen. Four days ago, however, he was again seized with severe cramp-like pains over the entire abdomen, which later became localized to the left lower quadrant; felt very sick; had a slight chill and was told by his doctor that his temperature was 104 F. This pain also subsided gradually into a dull ache, localized on the left side. He had slight nausea during the last attack, with headache, and a bad taste in his mouth, but no vomiting. The appetite had been good and the bowels regular. There was no pain on defecation and no blood or mucus was noticed in the stools. There were no urinary symptoms other than the slight pain in the hypogastrium at the end of micturition (v.s) which was no worse during the attacks of abdominal pain. There was no pain, nor swelling of testicles; no lameness nor pain in the back or hip, and no pain on walking or standing. The patient thought that the dull ache on the left side was slightly more marked during the process of assuming the erect posture after bending forward. He had had no night sweats and was not sure, but thought, he had lost some weight and strength.

Physical Examination.—The patient was well nourished, the tongue was clean; pulse was 25 to the quarter, of good volume and regular in force and rhythm; temperature, 100 F.; heart and lungs were negative; the abdomen was scaphoid; the respiratory movements were well marked throughout. On palpation the abdomen was soft and nowhere tender except over a small hard mass just outside the border of the left rectus muscle and between it and the anterior superior iliac spine and located about half way above and below a line drawn across the abdomen through the anterior superior iliac spines. This mass was somewhat tender, hard and apparently attached to the abdominal wall. There was no local redness, swelling, nor pitting of the skin, and no palpable local increase in surface temperature. Deep palpation elicited nothing but increased local pain. The genitalia were negative. The rectal examination was negative and a catheterized specimen of urine was entirely negative. Thorough examination of the spine, left hip joint and the left ilium yielded no signs of disease in those localities.

The diagnosis was not clear, but wavered between an intra-abdominal condition and a process local to the abdominal wall. Operation was proposed and accepted.

Operation.—An incision four and one-half inches long was made parallel to Poupart's ligament and about three-quarters of an inch above the anterior superior spine through the center of the palpable mass down to the external oblique, which was found to be edematous and grayish white in color. On incising the external oblique parallel to its fibers a small quantity of serum gushed out and the internal oblique was found to be edematous also, hard and indurated, and of the same color as the external oblique. The internal oblique was cut, and palpation revealed no intraperitoneal mass; so the peritoneum was not opened. A piece of muscle was then removed for examination and a culture was taken. The wound was loosely closed and freely drained from both angles.

Postoperative History.—For about 10 days the wound discharged a serosanguineous exudate, which never became purulent, and then began to heal rapidly. The urine was negative throughout, and the stools were normal. The temperature ranged from 99 to 101 F., until the discharge ceased, and then fell to normal.

When discharged from the hospital, there was no induration except that immediately along the line of the scar; and nothing could be felt in the region of the previously described mass. Nor did the patient feel any pain.

The culture made at the time of the operation was unfortunately lost. Sections of the piece of muscle removed showed a chronic interstitial myositis with hyaline degeneration of the muscle fibers, edema of the intramuscular connective tissue and a well-marked infiltration by small round cells and leucocytes.

In the first case the indiscretion in diet; the onset of general abdominal pain with vomiting and constipation; the pain at first general and later becoming localized on the right side, its subsidence after free catharsis and its subsequent return with greater severity and more definite localization on the right side; the coated tongue; fever and rapid pulse; the tender hard mass in the region of the appendix, and the increase in the number of leucocytes: all seemed to point definitely to some acute involvement of that organ. On retrospection after operation the only factors (local redness, heat, swelling and edema) which might have helped in diagnosis, were not present in a degree sufficiently marked to be noted in the examination. The only fact which seemed noteworthy was the very marked degree of local tenderness immediately over the mass proper, a condition, however, not at all incompatible with an acute inflammation in the appendix leading to abscess formation.

In the second case the localization of the pain on the left side, with practically no other features than the slightly increased amount of pain while assuming the erect posture and the increased pain on deep pressure, rendered less liable so radical an error as in the first instance. In this case local heat, redness and edema were looked for definitely and were not found, and retrospection after operation gave no additional data which would prevent an error in diagnosis in a subsequent case of a similar nature. Both cases were similar in the history of their onset and the absence of any explainable etiologic factor. They differed slightly in their subsequent course, Case 1 being the more acute and simulating very closely indeed the features of an appendicular abscess, while Case 2 was more chronic with a quiescent period of a little over three weeks before any acute symptoms returned and presented the features of a more or less chronic condition with acute exacerbations.

REVIEW OF LITERATURE.

The literature on conditions of this character is, as far as I could find, rather meager. Fouque[1] describes a case of phlegmon of the aponeurotic and muscular layers of the abdominal wall in a male, aged 57, in which the etiology was not known, but the patient was ill with what appeared to be a grave typhoid until local redness, tumefaction, and swelling appeared in the lower half of the abdomen. This was incised and the pus evacuated, following which the recovery of the patient was uneventful.

Sonnenberg[2] mentions the case of a boy, aged 17, who, while in apparently good health, was seized with severe pain in the right lower abdomen. This gradually subsided but, eight days later, while at stool, he was again seized with sharp abdominal pain and sent to the hospital with a diagnosis of perityphlitis. His temperature was 38.9 C. On the next day the temperature fell to normal and the pulse remained good. The abdomen was

1. Gaz. d. Hôp., Paris, 1884, lvii, p. 315.
2. Berlin. klin. Wochschr., xxiv, 1897, p. 810.

soft except for a large hard mass just below the costal margin extending from the right anterior border of the rectus muscle into the flank and separated from the liver dulness by an area of tympany in the nipple line, but continuous with it in the anterior axillary line. At the operation an abscess, the size of a hen's egg, which discharged yellowish-white sterile pus and contained broken down fat and msucle, was found between the external and internal oblique muscles. The surrounding muscle was hard and indurated. The peritoneum was apparently uninvolved and soft, and there was no underlying mass or resistance. Examination of a piece of muscle removed at the operation showed the pathologic features of a chronic interstitial myositis. The patient's recovery was uneventful. The revised diagnosis was chronic interstitial myositis of the external and internal oblique muscles.

Spellissy,[3] in an article devoted to conditions mistaken for appendicitis, quotes the above case of Sonnenberg and a second case (his Case 7) as follows:

J. A. Hopkins in the *New England Medical Monthly*, April, 1900, reports the case of a woman whose past history was not stated and whose symptoms suggested appendicitis. She exhibited pain in the right iliac fossa and suffered from local pain and tenderness. The possibility of appendicitis was kept in mind, but the diagnosis of an abscess of the abdominal wall was made. She was treated expectantly with poultices and the sequel proved that the abscess was limited to the abdominal wall.

Hiller[4] mentions the case of a woman, aged 23, with a tuberculous family history, who complained of occasional pain in the region of the gall bladder for three and a half years. For the past two months the pain had been more severe and there had been an intermittent sense of pressure in the gall-bladder region lasting for a day at a time. During this period of pain the patient had also noticed a tumor in that region which had gradually grown larger. On examination a smooth, somewhat movable, easily palpable tumor, the size of a goose egg, was felt in the gall-bladder region, two fingers' breadth below the costal margin, which seemed to have a thin pedicle leading up under the costal margin and which did not seem to be adherent to the abdominal walls. Operation was done for cholecystitis, but an abscess was found involving the right rectus muscle and infiltrating the adjacent muscles which discharged a thick, greenish pus containing caseous masses and in whose wall there were numerous tubercles. No connection between the abscess and the peritoneum or ribs could be found.

Allison[5] reports a case of tuberculous abscess of the abdominal wall simulating malignant disease of the transverse colon in a colored girl, aged 16, with a tuberculous family history, who eight months before admission to the hospital noticed a tender spot in the abdomen about the navel, when she stooped over the washtub. From that time on the abdomen began to increase in size and sharp pain from time to time shot through it. On examination the patient was quite anemic. There was a tenderness about the navel and for a considerable distance on each side of and below it and a swelling which in its outline resembled an omental or colic malignant growth. At the operation a tuberculous abscess was found between the rectus sheath and the peritoneum which extended from the navel downward and about four inches to each side of the median line. Following a long convalescence, the patient was discharged, well.

3. Annals of Surgery, June, 1902, p. 766.
4. Beitr. zur klin. Chir., 1899, xxv, p. 826.
5. Medical News, 1891, xxv, p. 217.

In conclusion, I express my thanks to Dr. P. R. Bolton for permission to report the two cases from his service at the New York Hospital.

10 East Sixteenth Street.

SOME TROPICAL CUTANEOUS ULCERATIVE CONDITIONS.*

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Under the term tropical ulcers so many types of cutaneous lesions may be included that it will be necessary at the outset to limit my remarks to certain forms of ulcerative process. It seems wisest, therefore, to exclude such forms of disease as tuberculosis, syphilis, yaws and leprosy. I shall confine myself to those described under the names "oriental sores," "tropical phagedena" and "veld sores," and dismiss those which have been less thoroughly discussed with a mere mention.

In studying tropical ulcers we must bear in mind that, under whatever title the processes have been described, there is so great a confusion of opinion with regard to etiology and clinical course and so meager a knowledge of histology that satisfactory classification is well-nigh impossible. This I have endeavored to take into consideration, and have chosen from among the bibliographic materials at my disposal those in which the descriptions are most uniform.

ORIENTAL SORE.

Since the first mention of this condition by Russell in 1756, many other men have written of it, and considerable literature has accumulated on the subject. Some of this material is valuable, much is not. First observed in Aleppo, from which city it took the name "Aleppo boil," it has since been studied in Morocco, Algiers, Tunis, Tripoli, Egypt, Crete, Cyprus, Asia Minor, Syria, Mesopotamia, Persia, the Caucasus, Turkestan, Afghanistan, Beluchistan, and India. In many of these districts it has acquired different names, usually that of the place at which it is most frequently seen. Thus it has been called the "Aleppo boil," "Delhi sore," "Biskra button," "Sahara chancre," "Afghan plague," "Tashkent ulcer," and so on. It has also taken other names, some descriptive of the lesions, others referring to their duration, while still others, such as the term tropical or oriental sores, are purely general. The latter, because of our present incomplete knowledge of the causation, are most appropriate.

Following Wright's definition, the disease consists of single or multiple focal lesions of the skin, characterized by the formation of elevated, indurated areas, which ulcerate and eventually cicatrize. It is infectious and autoinoculable. Histologically such lesions are characterized by cellular infiltration of the corium and subcutaneous tissue, together with hypertrophy, atrophy and disappearance of the corium.

In 1885, Cunningham observed in the lesions certain bodies which had ameba-like characters and which were spore-forming. To these bodies Firth, in confirming Cunningham's observations, applied the name *Sporozoa furunculosa*. Riehl, however, believed that these appearances were due to cellular degeneration.

The bodies described by Wright in the lesion taken from the face of an Armenian girl were generally round,

* Read before the Manila Medical Society, December, 1905.

sharply outlined and from 2 to 4 mm. in diameter. A large part of their peripheral portions was composed of stainable substance, while the central part was unstained. In each body, beside the larger peripheral stained mass, was a smaller one which stained more deeply. The larger mass was from ¼ to 1/3 the size of the whole body, was of variable shape, but always formed a part of the rounded periphery. Wright believes that these bodies are organisms, and has given them the name *Helcosoma tropica*. James and others have also described such structures in oriental sores, and have identified them with the Leishman body which was first studied in cases of kala-azar, or tropical febrile splenomegaly.

The disease is said to occur in dogs. Both Wright and James were unable to infect rabbits with fresh material, and James thinks that the so-called Delhi sores in dogs are of a different nature from those in human beings.

It is a peculiar fact that the same organism should in one locality produce a general disease like kala-azar and at another a purely local lesion. James thinks that in Annam, for instance, where kala-azar is so prevalent and so fatal, the organism is a more virulent one, while in the localities where the sores occur it is less virulent and does not cause a general infection. Manson believes that the presence of the camel in the latter places may explain the difference. He supposes that the organism passes through that animal and is thereby attenuated, much in the same way as vaccine is supposed to be derived from variola.

The question of the modes of infection has not as yet been completely elucidated. The general belief is that a previous lesion must be present to afford ingress for the organism. Such a lesion may be quite insignificant, as, for instance, the bite of a mosquito. Infection may also occur on the ground of other affections, such as the lesion of acne. It may be propagated by its own secretion, by scratching parts distant from the primary sore with infected fingers, by infected clothing or even, perhaps, infected baths.

One attack, while it may confer immunity, does not always do so. The immunity which develops may be permanent or very transient.

The clinical reports state that the period of incubation varies from a few days to a month. In the inoculated form the time is from ten to twelve days. Race, gender, age, constitution, occupation, general hygienic condition and food seem to play no rôle in determining the presence or absence of the disease. In children it usually does not appear until after the second or third year. Foreigners are generally exempt from it during their first year of residence in an infected district. It is more common in cities than in country districts.

The earliest visible sign of the disease is a small red spot which appears like a mosquito bite. On this there appears later a small spot of lighter color which gradually increases. After some time, months perhaps, a thin fluid is exuded, forming a yellowish crust which increases in thickness from below. If this crust be removed a small, rounded ulcer is exposed which has a tendency to increase peripherally. The healthy skin about the ulcer may be infected by the secretion, and a group of ulcers produced, which, if close together, tend to coalesce. The borders of the ulcer are sharp and somewhat irregular. The floor is covered with indolent granulations. The surrounding tissue may or may not be indurated. The seropurulent secretion varies in amount. In case the crusts are not removed they gradually become thicker and in time bear a close resemblance to syphilitic rupia. The deeper tissues are not affected.

Healing commences after several months and is accomplished during the course of several more. It leaves a scar which is often pigmented and sometimes contracted. Occasionally the lesions do not ulcerate and disappear after some months.

Unlike many other cutaneous ulcers, this disease is usually quite painless and produces no disturbance of general health. Moreover, it may disappear completely during the course of intercurrent disease, such as influenza or typhoid. In case it is complicated with or complicates syphilis, tuberculosis or scurvy, it tends to become phagedenic. It may become the seat of secondary infection. When complicated by lymphangitis, phlebitis, erysipelas, abscess or gangrene, it may result in death.

The number of ulcers in a single individual varies from one to forty or more, and they may occur in any part of the body. They are most commonly seen on the extensor surfaces of the extremities, next on the face and neck, and infrequently on the genitalia. In children they are found most frequently on the face. They never occur on the soles of the feet, palms of the hands, beard or scalp.

In sections of a specific lesion, one notices first that the corium and papillæ are infiltrated with lymphoid and plasma cells and with other cells that have originated from endothelium. Accompanying this infiltration, the epidermis atrophies and disappears. In smears from such a lesion, bodies which are readily stained by eosin and methylene blue and which have the characteristics mentioned above are found. They are present in large numbers and often occur in aggregations that seem to have an intracellular relation to a large cell. Their morphology and structure is constant. In sections similar bodies, which occupy and sometimes completely fill the large endothelial cells, are observed. James describes such structures in smears and sections made from Delhi boils.

Thus far this condition has not been found in the Philippine Islands, in spite of the fact that both Strong and I have sought diligently for it. It was in the course of such a research that, in 1903 and 1904, I examined many prisoners in Bilibid prison. From a large series of patients studied, thirty of the most promising were chosen for making cultural and histologic examinations. From the local lesions, cultures were made. The lesion was then excised and prepared for sectioning by fixing in Zenker's fluid and imbedding in paraffin. The lesions studied included papules, vesicles, pustules and ulcers, chiefly the latter. In the smears of twenty of these, hyphea and spores of trichophytons or allied organisms were found. In many of them were small diplococci resembling the gonococcus in form. Staphylococci were of very frequent occurrence, but in none of them could I see any bodies which either in number or in constancy of form corresponded with those of Wright. It is perfectly true that occasionally bodies somewhat resembling those of the English Indian observers were present, but under such conditions that I was forced to regard them as the result of cellular degeneration.

Later, in 1905, Strong observed, in a case presenting a chronic ulcer, bodies that in some respects resembled those described by Leishman and others. But this resemblance was superficial and was due to the fact that the parasite, which Strong considers a torula, was an

intracellular one, which when stained showed certain forms similar to those pictured by the English observers.

Still later, in 1905, I collected some tissue from superficial ulcers observed in St. Paul's Hospital, and diligently searched them for evidence of the bodies of Leishman and Wright. One of these lesions somewhat resembled tropical phagedena while another was rather like an Oriental sore in that it apparently did not originate on the surface and was not tender or painful. The lesion in this was a papular one covered with a macroscopically intact cuticle, but sections showed that the skin had undergone well-marked changes. The corium was infiltrated with round and polymorphous cells, the former predominating. There was also an hypertrophy of the epithelium, most marked at the edges of the papule. In the corium there were areas of localized degeneration. The subcutaneous tissue was infiltrated with round cells and leucocytes. Giant cells were plentiful. No bacteria could be demonstrated in the tissue, but there were in sections from some regions bodies that resembled those of Leishman. In one section five such bodies could be seen within an endothelial cell of a small blood vessel. In other places agglomerations resembling zoöglear masses were present. By the use of a powerful mordanting stain, still other bodies were made visible. These resembled the bodies described by Strong as torulæ. They were chiefly present within phagocytic cells. By the same method similar bodies were demonstrated in the nuclei of phagocytic cells, but not in the giant cells.

Except for the intense resistance to stains, these bodies might be compared with those of Wright. The conclusion which seems most logical is that they are the result of staining degenerated fragments. This conclusion gains support from a comparison of these figures with the drawings illustrating Maximow's work on connective tissue formation as it results from inflammation. It is possible, however, that they are of true parasitic nature, for they have much the same shape and size throughout the tissue, and they often show a more or less centrally placed chromatic material.

Finding that the patient presenting these lesions did not improve either under iodids or mercury, he was ordered copper sulphate in small doses (gr. ¼). Under this treatment he improved markedly. This therapeutic result certainly speaks in favor of a blastomycetic origin.

VELD SORES.

The discovery of the veld sore was one of the results of the unpleasantness between Boer and Briton in South Africa. Whether it is an actual pathologic entity and confined to the portion of the world where it was first observed can not be stated yet with perfect confidence, since there is little unanimity among the authors regarding its etiology, distribution and general course. Harman, whose work on the subject is voluminous and painstaking and the only authoritative one we have, considers the disease to be a particular one which has little, if anything, in common with other tropical cutaneous disorders. Harman based his report on some thousand cases, from which he made eight cultures, and from two of which he obtained tissue for histologic examination.

The sore as usually seen appears as an extremely superficial ulcer, edged by a fringe of exfoliated epithelial tissue and an areola of inflammatory redness. It commences as a small blister, the contents of which may be thin and watery or rather viscous. The organism is present in the contents of these vesicles. After the rupture of the vesicle the ulcer is exposed. It is not readily amenable to treatment and runs a very chronic course. The lesions occur chiefly in the extensor surfaces of the upper extremities from elbow to digit and at corresponding places on the lower limbs. It is most frequent on the backs of the hands and wrists.

Of 7,067 men examined, 19.35 per cent. had suffered or were suffering from the disease. Whites alone, Boers and British, were affected. In uncomplicated cases there were no constitutional symptoms.

The organism resembles *Staphylococcus pyogenes aureus* in morphologic appearance and in cultures. It acts on the tissues like an attenuated *Staphylococcus aureus,* but it produces a distinctive lesion in which it has a tendency to appear as a diplococcus. It is a luxuriant grower on the usual media and has a greater resistance to destruction than its prototype. It is called *M. vesicans.* With it Harman was able to infect himself and to produce the characteristic lesion and afterward to recover the organism in pure culture.

The histologic picture presented is simply that of an acute inflammatory process characterized by leucocytic infiltration with destruction of the dermis.

Lesions of the same general type as the veld sores are not of uncommon occurrence in Manila. I suffered from a series of such sores, and in smears from their contents could find nothing but a diplococcoid organism that had somewhat the appearance of pairs of rapidly growing pyogenic cocci.

These lesions originate at parts of the body which are subjected to trauma, as, for instance, the inner sides of the thighs in horsemen, and appear first as painful red points. In the course of several days the tissues beneath these points become firm and the tenderness increases. After four days or more the pain is intense. The contents of these nodules is a yellowish green, rather soft, but not fluid mass of necrotic tissue.

I find that, in my own cases, they healed most readily if dressed with alcohol or hot bichlorid solution. If incised, they tend to leave pigmented (brownish) scars.

TROPICAL PHAGEDENA.

Jeanselme points out that under the term "tropical phagedena" are included all sorts of tropical ulcerations whose nature is not understood. In a general way, the process may be described as one in which the ulceration is rapidly progressive and in which the lesion is covered with a diphtheroid membrane.

While it is most common in the Indo-Chinese peninsula, it has nevertheless been observed in many other tropical countries both in the old and in the new world. It is more common in low, humid, hot districts. Drs. Strong, McDill, Dudley and I have observed similar cases in Manila.

The apparent origin of the ulceration is in small abrasions of the skin, lesions that ordinarily would be thought of no consequence. Bites of insects, grass cuts, scratches of any sort, therefore, may predispose to the disease.

The first thing to be noticed in a typical case, according to the French writers, is a blister with serosanguineous contents. This ruptures and the base of the lesion becomes covered with a grayish false membrane. The secretion of the ulcers arising in this way is brownish or bloody and has a fetid odor. The gangrenous process extends rapidly and in some patients fever and weakness are present.

The extensions may be serpiginous or undermining, in the latter case involving vessels, nerves, tendon

sheaths, muscles, bones and joints. The result may be septicopyemia or fatal hemorrhage. Such cases are examples of the grave form of the disease, and are the sort which McDill, Dudley and I observed. Our case occurred on the basis of gangrene ensuing in a case of Raynaud's disease.

It is in the less severe forms that the diagnosis has been confused, and, in order to avoid confusion, Jeanselme suggests that the term tropical phagedena be confined to ulcerations which show rapid extension and a diphtheroid membrane. Bearing such a definition in mind, he says that there are only certain cases of syphilis that may be confusing, and the potassium iodid test will eliminate these.

Dantec and Vincent have both described organisms in the lesions, but were unable to cultivate them. Strong was able to isolate a staphylococcus and a proteus-like bacillus; the latter was, however, non-pathogenic. In the case mentioned above only the golden staphylococcus was found.

The histologic features are similar to those observed in diphtheritic infections. The surface of the lesion is covered with a diphtheroid membrane composed of fibrin and cellular remnants. The deeper layer shows round cells and leucocytic infiltration and edematous distension and separation of the cellular elements. In Strong's case there was a considerable perithelial proliferation, which was most marked about the veins. The process is, then no more than an acute fibrinopurulent inflammation of the skin, which may in severe cases affect other adjacent tissues. The peculiarity is that it is autoinoculable and may be transmitted from man to man. When these facts are borne in mind its similarity to hospital gangrene is evident.

McDill and Wherry have reported cases of a form of severe hand infection from which Wherry isolated an organism identical with, or closely allied to, the bacillus of Koch and Weeks. Such cases might also be included under the title of tropical phagedena, and, in view of the fact that infection is so readily accomplished, and that the cases of acute contagious conjunctivitis caused by this organism are not uncommon, it may be an important etiologic agent in this condition.

When we consider the common clinical features of these various sorts of lesions, and the varying descriptions that have been given of them, together with the varying bacteriologic reports on their contents, it seems extremly probable that few of them are entities from their incipiency, and it would seem best for the present, leaving aside the specific lesions of syphilis, tuberculosis, leprosy and perhaps yaws, to confine all in the one group of ulcerative dermatites.

My own experience has been that the majority of these cases are the result of a primary trichophyton infection ("dhobie itch") on which, in consequence of continued irritation in one way or another, a secondary infection has been engrafted. A small number of lesions is caused by one or another organism, the commonest being the golden staphylococcus and an uncommon one the Koch-Weeks bacillus. A few cases are of blastomycetic origin.

The type of lesion produced by a given organism is often quite as dependent on the individual infected as on the organism itself.

The Meat Inspection Law.—While this law has been looked on as a sacrifice of the gigantic business enterprises subject to its operation, its wisdom must speedily become plain to everybody.—*New York Medical Journal.*

Clinical Notes

THE USE OF PLASTER ABOUT THE HAND.

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The treatment of fractures of the hand and fingers, as a rule, has been considered of rather minor importance, because of the relatively more serious fractures which have to be dealt with. Yet to the patient with a broken hand there is little to interest him in fractures, except that which concerns the particular lesion from which he is suffering.

Attention to details in the treatment of these fractures can not be overestimated, and is just as essential to good results as in the case of more important breaks. The diagnosis is usually easy, but the difficulty arises when one comes to apply a firm and compact dressing. Simple as it may seem, this work is often accomplished in a slipshod manner because of its very simplicity. The usual splints of wood, cardboard, etc., are either too cumbersome or do not hold the parts as firmly as they should, and especially devised apparatus is always at a discount because of the inconvenience and loss of time in obtaining it.

Fig. 1.—Showing plaster splint applied to the thumb.

One has but to inspect the normal hand to see how difficult it is to pad a flat splint so that it may conform to the various curves and not distort the member to which applied and at the same time give no discomfort to the patient.

Plain gauze, the best quality of dental plaster, zinc oxid adhesive plaster and roller bandages will, as a rule, meet all emergencies far better than any of the splints now in use. Such materials are of most decided use when applied to compound fractures of the thumb and fingers.

APPLIED TO A PHALANX.

Figure 1 shows a plaster splint applied to the thumb. Such a splint encircles more than one-half of the wrist; its edges then converge across the palm of the hand toward the base of the injured digit to form a groove in which the thumb lies securely bound down by adhesive plaster. The method of applying the dressing is as

follows: A piece of plain gauze is folded till it is about 14 ply and then cut to fit the parts according to the location of the fracture. It should then be thoroughly soaked in cream of plaster, wrung out and dry plaster rubbed into the meshes followed by enough water to moisten it, when it may be rapidly applied with a bandage and held in the position desired for the correction of the deformity, till the plaster begins to set. It may then be removed from the hand and allowed to become thoroughly dry while resting on a radiator or in the sun. The splint should in all cases include a little more than half the wrist and should immobilize the metacarpal bone as well as the phalanx itself. It may be allowed to become thoroughly hard and firm either on or off the hand after it has dried sufficiently to hold its form. When the fracture is compound the splint is made to leave the wound exposed, thus allowing for daily dressing without disturbing the parts. Should the wound be in the palmar aspect the splint should be applied to the dorsum of the hand (Fig. 2) and vice versa. Wherever the splint is exposed to contact with discharges it may be covered with a few coats of shellac varnish or protected by gutta-percha tissue. Such a dressing may be made to immobilize any or all of the fingers by varying the pattern while cutting the gauze.

This form of splint is neat, compact, comfortable, and can be made to hold the parts absolutely secure. It allows for daily dressing and inspection without in the least disturbing the alignment of the bones. It can be applied quickly and the materials of which it is made are inexpensive, easily obtainable or kept in stock if one wishes. It is equally effective when applied to either palmar or dorsal aspects and requires less subsequent adjustment than do other splints, because it fits, and swelling of the parts does not disturb the alignment nor necessitate removal of the dressing, as is sometimes the case when a cast is used. Being made to conform to the peculiarities of the individual case pressure and counter-pressure are not obtained by padding but are a part of the splint itself. The tendency toward rotary displacement is more easily avoided by this splint as it takes hold of the finger, as it were, instead of simply being bound on.

Fig. 2.—Showing splint applied to the dorsum of the hand.

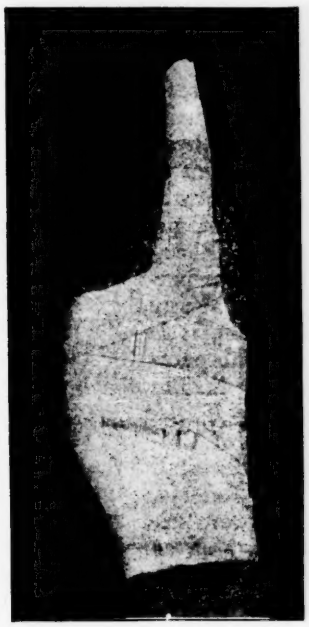

Fig. 3.—Showing splint covering the back of the hand and extending along the back of the finger corresponding to the broken metacarpal bone.

Fig. 4.—Showing splint projecting beyond edge of the finger to permit of extension and counter-extension.

IN FRACTURES OF THE METACARPAL BONES.

Fracture of the metacarpal bones is usually treated by placing a 3-inch roller bandage in the fist, securing it as described by Scudder in his text book on "fractures." If the bandage be previously soaked in plaster, however, it will be found that less subsequent adjustment is necessary, because of the solid support given after the plaster has dried. Should a fracture of a metacarpal bone be compound anteriorly or accompanied by wounds on the palmar aspect of the hand a splint such as shown in Figure 3 may be employed. This splint covers the back of the hand and extends along the back of the finger corresponding to the broken metacarpal. The knuckles adjoining the fracture are depressed by the surgeon's thumbs while his fingers make counter-pressure in the palm, thus raising the injured knuckle while the plaster is setting. After the splint has become thoroughly dry it is secured to the hand by adhesive plaster, the base of the finger being drawn tightly up against the splint. This will usually be found to have raised the knuckle sufficiently, though in loose-jointed patients it may be necessary to place in the palm of the hand a small splint so formed as to raise the injured knuckle further into the concavity of the dorsal splint.

Should extension and counter-extension be desired it may be obtained by projecting the splint 3 or 4 inches beyond the end of the finger, as shown in Figure 4.

A hole is cut in the end of the splint and a piece of rubber tubing drawn through it, one of the loose ends being knotted. The finger is then secured to the rubber in the usual way by a loop of adhesive plaster. By this method one is able to increase the tension as desired, by pulling the unknotted end, slipping being prevented by engagement with the knot on the end next

to the hole. Such a simple method of extension can also be applied to a wooden splint. When plaster is used a number of hours should elapse before the splint is subjected to the strain and it should be made heavier than when extension is not needed. A very simple method of obtaining extension which will usually suffice in fracture of the metacarpals is by flexing the terminal and second phalanges over a palmar splint, maintaining traction while the plaster is hardening. If the two flexed phalanges are then firmly secured and the rest of the splint drawn into place, extension and counter-extension will be all that is usually required.

Superfluous plaster may be removed from the skin by washing with sugar or molasses. Salt may be added to hasten the setting of the plaster, when this is desirable, too much salt, however, will render the plaster brittle.

THE PREVALENCE OF INTESTINAL PARASITES IN KIANG SU PROVINCE, CHINA.

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Although it is commonly known that intestinal parasites are very prevalent in China, but little definite statistical work has been done, and so far as can be ascertained none in this province of Kiang Su. China, considered medically, is rather an indefinite term with its great extent of territory and its hundreds of millions of people. The eighteen provinces vary in many important essentials as: 1. Climate; from the arctic cold of the northern to the tropical heat of the southern. 2. Elevation; from the plains and level provinces to the mountainous. 3. Density of population; from 30 to a square mile to 600. 4. Amount of rainfall. Therefore, it is quite probable that the prevalence of intestinal parasites in one province will be quite different from that in another.

The present series of examinations of stools of Chinese was made at the laboratory of St. Luke's Hospital, Shanghai, through the kindness of Dr. W. H. Jefferys. The stools of all the patients in the hospital were examined without regard to symptoms presented, and, as they were of the lower class, the majority of the Chinese in this province probably show the same percentage and kind of infection.

Kiang Su province has an area of 36,000 square miles, with a population of 25,000,000, or 568 to the square mile, with one exception the most densely populated province in China. It consists of low-lying land extremely well watered, with rivers, including the great Yang Tse, lakes and the grand canal. The climate is hot in summer, cool in the fall and an occasional light snow in the winter. There are many cases of malaria and filariasis. It resembles many of the provinces near it, but further inland the country becomes more mountainous.

With the above conditions, the absence of sewerage systems, and the unclean habits of the people, one would expect to find many cases of intestinal parasites as well as of other diseases caused by unhygienic surroundings. The practice of spreading night soil over vegetables, strawberries, etc., is perhaps one of the most prolific sources of infection. Water probably plays a less important rôle, as the natives rarely drink anything but hot tea or hot water. The Chinese believe that cold water is unwholesome, indicating that the Chinaman has learned through experience what the doctor has learned through science. In the large foreign settlement cities as Shanghai, the local boards of health have spent considerable effort in instructing the Chinese in simple hygienic measures.

In all, during the months of October and November, 1906, 50 stools were examined. It was the original intention to secure one or two hundred, but even the fifty were obtained with some difficulty, as the Chinese are rather loath to contribute to such a little understood process as fecal examination. The patients in St. Luke's Hospital are nearly all adult males, with ailments or injuries from fractured limbs to beriberi. The stools were examined in the usual way, all with the high power. Following are the results in tabulated form:

TABLE 1.

Percentage of infection.	No. of stools.	Per cent.
Examined	50	..
Showing infection with one or more intestinal parasites	30	60
Showing infection with *Ascaris lumbricoides*	26	52
Showing infection with *Tricocephalus dispar*	9	18
Showing infection with *Uncinaria duodenalis*	2	4
Showing infection with *Oxyuris vermicularis*	1	2

TABLE 2.

Cases of Double Infection.	No. of stools.
Showing double infection	8
Showing infection with *Ascaris* and *Tricocephalus*	5
Showing infection with *Ascaris* and *Oxyuris*	1
Showing infection with *Ascaris* and *Uncinaria*	1
Showing infection with *Uncinaria* and *Tricocephalus*	1

TABLE 3.

Relative Frequency of Parasites Found.	No. of parasites.	Per cent.
Ascaris lumbricoides among the infected stools	26	86+
Tricocephalus dispar among the infected stools.	9	29+
Uncinaria duodenalis among the infected stools	2	6+
Oxyuris vermicularis among the infected stools.	1	3+

The sum of the percentages in Table 3 comes to over 100, but it must be remembered that many of the cases were double infections.

The above tables would indicate that 60 per cent. of the population of Kiang Su province are infected with intestinal parasites, and this figure is probably under rather than over the true estimate, as it is possible that some stools with very few ova were overlooked. Some of the stools, for instance, would show only one ovum of the *Ascaris lumbricoides* in a slide, while others would show large numbers of ova to every field. Then, too, it may be possible that if only one or two worms were present the discharge of ova might be intermittent, and thus the presence of parasites be overlooked with only one examination. *Ascaris* seems to be by far the most common parasite, with the *Tricocephalus* next. The ova of the *Ascaris lumbricoides* varied greatly in size, shape and color; a number of the long oval shape that have been described[1] as probably belonging to a new species of *Ascaris* were seen.

Two cases of infection with *Uncinaria duodenalis* are noted, or 4 per cent. of the stools examined. Both showed but a few ova, two or three to a slide, and after treatment with thymol search for the parasites was made without success.

One case of *Oxyuris vermicularis* was noted. J. Ch. Huber[2] states that he has never discovered the ova of this parasite in fecal material taken from the rectum, and that microscopic examination of the dejecta is of little diagnostic value. O. Leichtenstern[2] and Lutz[2] have also

1. O. T. Logan: The China Med. Missionary Jour., September, 1906.
2. Twentieth Century Pract. of Med., viii, 1896 Ed.

failed to discover the ova of *Oxyuris* in fecal examination. On the other hand, v. Jackson says he has almost always found them in the feces.

No ova of the tapeworms were found. The Chinese eat but very little beef, and that well cooked, explaining the absence of *Tenia saginata*. A great deal of pork is eaten, but thoroughly cooked, so *Tenia solium* also is apparently uncommon.

Of the unicellular intestinal parasites but one was noted, the *Trichomonas intestinalis*. Some of the stools, however, were examined after standing for some time, so it is possible some were overlooked in this way. Dysentery and abscess of the liver are not uncommon here; during 1905[3] there were three deaths from abscess of the liver among the foreign resident population of about 12,000. No statistics of its prevalence among the Chinese are available. Neither the *Entamœba coli* nor the *Entamœba histolytica* was found in any of the fifty stools examined.

A NEW EYE SPECULUM.

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This improved eye speculum is made entirely of brass and is, therefore, non-magnetic. It is composed of only two parts, which are easily detached for cleansing. It has neither spring, setscrew, hinge or ratchet. It is very light, weighing less than three drams. It is introduced easily without changing hands, locking itself automatically.

It can be removed very quickly without the resistance of a spring to overcome, a setscrew to loosen or the fear that it may slip from the hand. It takes but a moment to increase or to diminish the pressure on the lids. It has the advantage of the original Mellinger's speculum in that the blades open parallel.

The blades are solid and conform to the curve of the lid margin. The pressure on the sensitive lid, therefore, is equally distributed, reducing the distress and reflex spasm to a minimum. The under surfaces of the blades are concave to conform to the convexity of the eyeball, so that it is unnecessary

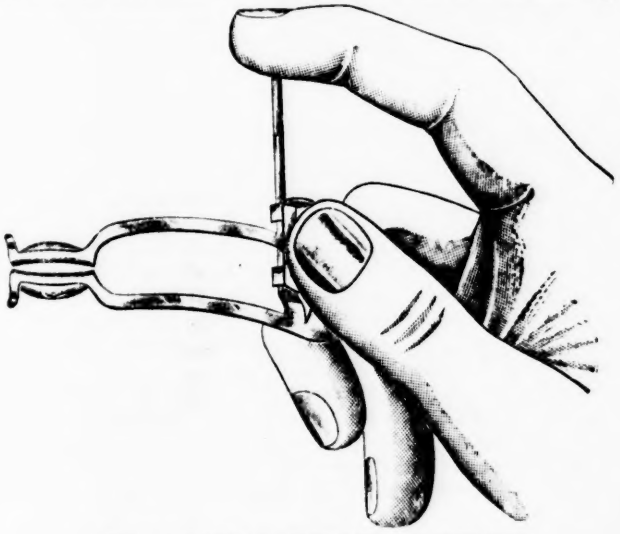

Fig. 1.—Method of introducing the speculum.

for an assistant to hold the speculum at the most critical period of an operation.

The advantage of the wire speculum is maintained by removing a piece from the outer part of the blades, leaving just enough to turn the lashes upward and downward. The heels of the blades are beveled, that the speculum may be removed quickly without danger, and without touching the lids to release them. The sliding bar lies on the face and out of the way.

In originating this speculum I was prompted by the desire to get a non-magnetic speculum, but after using it for three years in all sorts of operations on the eyeball I feel that it has other advantages that will appeal to the progressive worker in opthalmology.

After the technic of using the speculum is fully understood very little practice is necessary to operate it successfully. A reference to the illustrations will show the method of handling the instrument.

Fig. 2.—Method of removing the speculum.

A CONTRIBUTION TO CHEILOPLASTY.

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Of the many deformities of the lower lip none is more distressing or more difficult to remedy than ectropion or eversion of the lower lip following extensive burns of the lower part of face and neck. Burns involving the deeper layers of the skin about the neck are almost always followed by this deformity, together with an extensive amount of scar tissue. This often extends up to the cheeks, but more often involves the skin about the inferior maxillary region and the anterior part of neck. The firm adherence of the scar tissue to the muscles and structures immediately beneath it renders the cheiloplastic operations usually described in text-books difficult, uncertain or impossible.

The operation usually recommended for this condition consists in making a V-shaped incision corresponding to the margins of the inverted lip, raising the lip and closure of the wound thus made in the form of the letter Y. This operation presupposes some mobility of the skin. and scar tissue on either side of the everted lip, and, while this mobility may sometimes exist, rendering this operation applicable, in most of the cases the fibrous tissue is so dense as to render the operation useless.

Elevation of the everted lip, after the V-shaped incision, combined with Thiersch skin-grafts for the denuded area, is probably the most applicable of all methods. This method, however, has the following deficiencies, viz.:

1. The difficulty of maintaining the reflected lip in its normal position until the union of the grafts.

2. Inability to overcorrect the deformity, which is so

3. Ann. Rep. Health Dept., Shanghai, China, 1905.

necessary to success in all plastic operations, in order to allow for subsequent contraction.

3. Difficulty in maintaining skin-grafts in position.

4. Infection of operative site by secretions from the mouth.

The operation which I wish to describe overcomes at least the first three of these deficiencies.

TECHNIC.

An incision is made, oval in outline, corresponding to the muco-cutaneous margin of the everted lip and extending through the skin down to the superficial muscles. The flap, consisting mostly of the mucous membrane of the everted lip, is dissected upward, care being taken that sufficient flap is secured to overcorrect the deformity. Hemorrhage is moderately severe and is controlled by pressure forceps and hot sponges.

The reflected flap or lip is now held in its normal, somewhat overcorrected position by what may be designated as the "skewer method." Beginning at the left side of the mouth, about one-quarter of an inch above and to the outer side of the angle, at a height corresponding to the upper border of the flap, a previously prepared short silver probe sharpened on one end is

Figure 1.

Figure 2.

passed through the cheek toward the margin of the reflected lip, the point being passed submucously through the entire lip and piercing the right cheek at a point corresponding to its entrance on the left side (Fig. 1).

The lip will now be found securely held in its desired position, giving the opening of the mouth a somewhat triangular outline. The introduction of the sharpened probe in the manner described is easy.

In the first case in which this operation was done a heavy silver wire was used in place of the probe, but on account of the flexibility of the wire some downward sagging of the lip resulted. The probe should be heavy enough to prevent this. After the probe is in place a small gauze pad is threaded on each end, and a perforated shot placed next to the gauze, and the excess of the probe then cut away. The denuded surface is now completely covered by Thiersch skin-grafts, which are secured in place by a few stitches of either fine silk or catgut (Fig. 2). If silk is used, it should be of the finest, which is best obtained by splitting No. 1 silk and using a fine cambric needle. Before introducing the silk sutures they should be smeared with sterile vaselin, which reduces the liability of displacement of the grafts.

The dressing consists of salt solution and gutta-percha tissue changed daily, and after from three to five days the use of a saturated boric-acid solution instead of the salt solution.

The prevention of contamination by mouth secretions is most difficult and is best overcome by frequent dressings. I have used this method in two cases, both of which gave most gratifying results.

CASE 1.—Boy, aged 4, entered the Lucas County Hospital Dec. 19, 1902, suffering from extensive burns about the lower part of the face, entire neck, chest and right forearm. He was treated for several months, healing taking place after daily antiseptic dressings and skin grafting about the chest, neck and arm. Cicatrization about the neck and lower part of the face resulted in ectropion of the lower lip. Two unsuccessful operations were made to restore the lip by raising it and skin grafting.

The third operation consisted in raising the lip and passing a heavy silver wire through the cheeks and lower lip, suspending the lip thereon, while the denuded area was covered by Thiersch grafts; it was dressed with salt solution and gutta-percha tissue. On account of the flexibility of the wire, some sagging of the lip occurred.

The cosmetic result was good, the patient being under observation for several months, during which time the lip remained in good position.

CASE 2.—Girl, aged 14, referred to me by Dr. C. F. Douglass, Kalida, Ohio, entered the St. Vincent's Hospital Aug. 19, 1906. Patient, when 4 years old, was burned about the face

Figure 3.

Figure 4.

and neck. Healing took place in about two months, with the resulting deformity of lower lip shown in Figure 3. Two operations for the correction of the deformity were made by other surgeons about five years previously, consisting of a transverse incision under the chin and the reflection of the lip upward together with an extirpation of some of the everted mucous membrane. These procedures failed to correct the deformity. The condition on entrance to the hospital consisted of a typical ectropion of the lower lip; backward movement of the head was somewhat limited on account of scar tissue about the neck and chin.

On Aug. 20, 1906, a V-shaped flap, consisting of the everted lip and skin, was dissected upward and the wound closed in form of the letter Y. This operation did not correct the ectropion, but loosened the scar tissue about the neck and gave prominence to the chin, which before this operation had been lost.

On Sept. 11, 1906, the eversion of the lip was corrected by the "skewer method," in the manner already described.

Some suppuration of the wound required daily dressings; the probe was removed on September 20 by cutting off the shot at one end and withdrawing the remaining part, the removal being painless. The lip remained in place and the patient was discharged from the hospital on September 30, entire healing taking 16 days (Fig. 4).

237 Michigan Street.

New and Non-Official Remedies

THE FOLLOWING ARTICLES HAVE BEEN TENTATIVELY ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN THE PROPOSED ANNUAL, "NEW AND NON-OFFICIAL REMEDIES." THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT, BUT TO SOME EXTENT ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE FINAL ACCEPTANCE AND PUBLICATION IN BOOK FORM.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

(*Continued from page 697.*)

(*A list of all accepted articles is published on advertising page 24, this issue.*)

THYREOIDECTIN.

CAPSULÆ ANTITHYROIDEÆ.

Thyreoidectin consists of gelatin capsules each containing 0.33 Gm. (5 grains) of a powder prepared from the blood of thyreoidectomized animals.

The blood is derived from sheep, goats or horses (chiefly sheep) from which the thyroid gland has been removed. The blood is rendered aseptic during the process of desiccation by the addition of chloroform, and aromatics are added to the resultant powder as a flavor.

The contents of the capsules consist of a coarse, reddish-brown powder, resembling dried blood.

Actions and Uses.—See Antithyroid Preparations.

Dosage.—One to two capsules three times a day, the amount being varied to suit the individual case.

Prepared by Parke, Davis & Co., Detroit, Mich.

TONIC HYPOPHOSPHITES.

SYRUPUS HYPOPHOSPHITUM TONICUS.

Each 30 Cc. (1 fluidounce) is said to contain: Potassium hypophosphite, 0.1 Gm. (1½ grains), iron hypophosphite 0.1 Gm. (1½ grains), manganese hypophosphite, 0.065 Gm. (1 grain), quinine hypophosphite, 0.03 Gm. (½ grain), strychnine hypophosphite, 0.004 Gm. (1/16 grain).

Dosage.—4 to 8 Cc. (1 to 2 fluidrams).

Prepared by Sharp & Dohme, Baltimore, Md.

TRYPSOGEN.

Tablets, said to contain the enzyme of the islands of Langerhans with the tryptic and amylolytic ferments of the pancreas, 0.0006 Gm. (1/100 grain) gold bromide and 0.0003 Gm. (1/200 grain) arsenic bromide in each tablet.

The sugar oxidizing, amylolytic and tryptic ferments are said to be prepared from the tails of the pancreatic glands of young calves and lambs.

The tablets are of a light brown color, a faint odor and a sweetish taste.

The preparation should show active power of converting starch into sugar and should give the reactions for gold, arsenic and bromine. Methods of testing for the sugar oxidizing ferment are not known.

Actions and Uses.—Trypsogen has the amylolytic and tryptic power of pancreatin and is said to exert the sugar oxidizing action of the islands of Langerhans.

It is claimed that it is a rational treatment for diabetes and glycosuria, supplying the ferment of the islands of Langerhans which is lacking in these cases. It is also said to be useful in anemia, chlorosis, chorea and neurasthenia.

Dosage.—In glycosuric conditions 2 tablets after each meal gradually increased to the limit of tolerance, or until 5 to 7 tablets are taken; then discontinue for two days and begin again with the smaller dose and increase as before. In neurasthenic conditions 1 to 3 tablets immediately after each meal.

Prepared by G. W. Carnrick Co., New York. U. S. trademark.

TUMENOL-AMMONIUM.

Tumenol-ammonium is the ammonium salt of tumenol sulphonic acid (see Tumenol).

Tumenol-ammonium is a dark oil with a faint tarry odor and acrid taste. It is soluble in water in all proportions with a neutral reaction. It is also soluble in alcohol, ether and glycerin.

Actions and Uses.—See Tumenol.

Dosage.—Tumenol-ammonium is applied as a local dressing in the form of a 5 to 10 per cent. aqueous solution, a 5 to 20 per cent. tincture containing equal parts of ether, alcohol and water or glycerin, and as a 5 to 20 per cent. ointment.

Manufactured by Farbwerke, vorm. Meister Lucius & Bruening, Hoechst a. M., Germany (Victor Koechl & Co., New York). Not patented in U. S.

VALIDOL.

Validol is the menthylester of valerianic acid, $C_{10}H_{19}O.C_5H_9O$, with 30 per cent. of free menthol.

It is prepared by heating a mixture of 16 parts of menthol and 12 parts of valerylchloride on a water bath until hydrogen chloride ceases to be given off, adding very dilute solution of sodium hydroxide, shaking out the mixture with ether, drying the ether-solution with potassium carbonate, distilling off the ether, and rectifying the residual oily product by vacuum distillation, finally, dissolving 30 per cent. of free menthol in the pure ester so obtained.

Validol is a crystal-clear, colorless liquid, of the consistency of glycerin having a mild and pleasant odor, distinct from either that of menthol or valerian, and a refreshingly cool and very faintly bitter taste, insoluble in water, but readily soluble in alcohol, ether, chloroform, and oils. It is decomposed by alkalies. On warming with sodium hydroxide solution, the odor of menthol manifests itself; if then the alkaline solution is acidulated with diluted sulphuric acid, the odor of valerianic acid is developed. It is incompatible with alkaline media.

Actions and Uses.—Analeptic, antihysteric, carminative, stomachic; combining the activity of valerianic acid and of menthol. It is devoid of the irritating acridity of the latter and is said to be well tolerated by the most sensitive stomach.

It is recommended in hysteria, migraine, gastralgia, gastritis, vomiting of pregnancy, exhaustion, hypochondria, syncope and all reflex neuroses.

Dosage.—10 to 15 drops, on sugar, or in a little sweet wine.

Manufactured by Ver. Chininfabriken, Zimmer & Co., Frankfort a. M., Germany (C. Bischoff & Co., New York).

VALIDOL CAMPHORATUM.

CAMPHORATED VALIDOL.

Camphorated Validol is a 10 per cent. solution of camphor in validol. Camphorated Validol is a clear, colorless liquid, of the consistency of glycerin, having an agreeable odor, and refreshingly cool and faintly bitter taste. It is insoluble in water, but readily soluble in alcohol, oils and other organic solvents. It is incompatible with alkaline media.

Actions and Uses.—Restorative, local analgesic, non-irritant and non-poisonous; well tolerated by the mucous membrane of the stomach. It is recommended in serious cases of exhaustion, where the administration of camphor is indicated; in odontalgia, either by application to the pulp or inserted on cotton into the previously rinsed cavity.

Dosage.—10 to 15 drops, on sugar or in wine.

Manufactured by Ver. Chininfabriken, Zimmer & Co., Frankfort a. M., Germany (C. Bischoff & Co., New York).

(*To be continued.*)

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SATURDAY, MARCH 2, 1907.

THE SIGNIFICANCE OF DECREASED HYDROCHLORIC ACID IN GASTRIC CANCER.

Few facts in clinical chemistry have been more utilized and relied on in diagnosis than the decrease in acidity of the gastric juice in cancer of the stomach. The explanation of this fact has not been so satisfactory, however, for the degree of reduction in acidity has not been found to bear any constant ratio either to the extent of the growth or to its point of origin in the stomach. The coincidence of the location of the growth in the stomach with a decrease in the functional activity of that organ has naturally led to an association of the two facts, and emphasized the view that the decrease in acidity of the gastric juice in cancer of the stomach depends on some local effect of the tumor. This explanation, however, has never been satisfactory, for frequently a very local growth has been found associated with total absence of free hydrochloric acid, in spite of the fact that nearly all the gastric mucosa was uninvolved, and, so far as histologic examinations show, perfectly capable of performing its full function. Consequently we have attempted to satisfy ourselves with the idea that the local cancer has caused some obscure chemical change in the rest of the gastric mucosa, or has in some unexplainable way modified the secretory innervation. One writer, indeed, seeking for something tangible, has ventured the idea that products of the autolysis of the cancer neutralize the acid of the gastric juice, a very improbable hypothesis.

Anything new concerning the subject of the acidity of the gastric juice in cancer of the stomach is, therefore, highly welcome, particularly so when it bears evidence of being the outcome of exact study by improved scientific methods. This is emphatically the case with two papers recently published by Professor Benjamin Moore, of Liverpool, and his colleagues,[1] which deal with the acidity of the gastric juice of persons who do not have cancer of the stomach, as compared with the usual findings in gastric carcinoma. The very important fact is brought out that the decreased acidity of gastric cancer does not depend on the fact that the cancer is located in the stomach, for an equally striking reduction in acidity occurs in patients who have malignant growths located in any and all parts of the body. Corroborative results have been obtained by F. W. M. Palmer.[2] It was also found that patients with noncancerous diseases usually show no such striking reduction in gastric acidity as cancer patients, although not infrequently an extremely low quantity of free hydrochloric acid is observed in patients with no evidence of gastric disturbance of any kind. Evidently, then, the secretion of hydrochloric acid by the stomach is extremely susceptible to the influence of any depression in the general health of the body, and cancer of the stomach exercises no specific influence on this secretion. On the whole, however, the reduction in acid secreting power is much more marked in cancer than in other conditions, free acid being entirely absent in about two-thirds of all cases studied by the most approved methods, and much reduced in the remaining one-third.

As an explanation of the inability of the stomach to secrete hydrochloric acid in cancer, it is suggested that in this condition the blood plasma contains less free hydrogen ions than normal for the gastric cells to secrete into the stomach cavity in the form of free acid. In support of this hypothesis is reported the observation that in cancer the alkalinity of the inorganic constituents of the plasma is increased (it is impossible to determine directly the concentration of hydrogen ions in the plasma because it is too small to be measured). Whether or not this explanation is correct there still remains the important new observation of the general influence of cancerous growths, wherever located, on gastric secretion of hydrochloric acid; and this observation must have an important influence on clinical diagnosis by means of analysis of the gastric juice.

1. Proc. Royal Society, 1905, lxxvi, 138; Biochem. Jour. 1906, i, 274.

2. Biochem. Jour., 1906, i, 398.

DIMITRI IVANOVITCH MENDELEEFF.

By the recent death of Dimitri Ivanovitch Mendeléeff the world of science loses one of the most striking figures that has appeared within our times, while Russia loses a character which constituted one of the bright spots in the records of that country. It may properly be said that Mendeléeff was one of Russia's greatest contributions to the world's progress, and that by the chemists of foreign nations he will always be remembered in connection with that country, as Berzelius with Sweden, Liebig with Germany, or Dumas with France. Mendeléeff obtained his education almost entirely in Russia, and so he may be credited wholly to her. He was born of educated parents; at the time of his birth (1834) his father was director of the college at Tobolsk in Siberia. His mother was a woman of remarkable character, who, when her husband became blind, established and successfully managed a glass works which supported her large family. After pursuing his studies in various parts of Russia, Mendeléeff was made a privat-docent in the University of St. Petersburg when twenty-two years of age. From the beginning of his career he interested himself chiefly with problems related to the fundamental

principles of physical chemistry. Although he accomplished much research along these lines, his principal contributions are the result of his great powers of generalization, which permitted him to grasp the essential principles underlying heterogeneous observations coming from scattered sources. The greatest of his generalizations, and the one on which his fame will ever rest secure, is embodied in the "Law of the Periodicity of the Elements," which he published in his classic "Principles of Chemistry" in 1869.

The essential features of this law, which Mendeléeff developed from the facts that had been accumulated up to the time of its publication, are briefly as follows: If all the elements are arranged in the order of their atomic weights it will be found that the properties of the elements thus arranged show a marked periodicity. Elements which are similar to one another in chemical properties fall together in such a table, for either their atomic weights are nearly the same (e. g., platinum, iridium, osmium), or they show a regular increase (e. g., potassium, rubidium, cesium). Also, the arrangement of the elements, or groups of elements, in the order of their atomic weights, corresponds to their valences. The magnitude of the atomic weight, therefore, determines the character of an element, just as the magnitude of the molecule determines the character of the compound body.

When the known elements were thus grouped according to the atomic weights assigned to them at the date of this first publication of the law it was noted that there were a few of the elements which did not come exactly where they should if the law were a general law; and, also, that there were a number of gaps in the table. So clear was Mendeléeff as to the universal applicability of the law of periodicity that he ventured to predict that those elements which were out of place in his table would be found to have had incorrect atomic weights assigned them, and that a restudy of their atomic weights would bring them into place on the table. As for the gaps in the table, these depended on elements yet undiscovered, but which, he predicted, would yet be found; and by application of the law of periodicity he foretold the properties of the missing elements and their probable sources. The immediate result of this publication was a greatly stimulated research in two directions, one the restudy of the atomic weights of the known elements; the other a search for new elements, which search now became a well-directed hunt guided by the foretold knowledge of the properties of the new elements, instead of a blind search after unknown things. In both cases Mendeléeff's predictions were brilliantly fulfilled, and within a very short space of time, so that he was permitted to enjoy his triumph for many years. Revision of atomic weights showed that the correction always brought the elements into the exact places in the series to which their properties assigned them according to the periodic law. And several new elements have been discovered with the properties and atomic weights foretold by Mendeléeff, which fill in many of the gaps in his table. The law of periodicity is, then, a fundamental one, on which researches can be based, not only in studying new or rare elements, but also in investigating the problems of the constitution of matter.

But Mendeléeff's claim to greatness does not rest on this single discovery. Not only did he write important papers on such subjects as the specific volumes of liquids, the theory of solution, elasticity of gases, and allied subjects, but he had a profound influence on the study of chemistry in Russia. A large proportion of the teachers of chemistry of that country have received their training under him and his pupils, and his early treatise on organic chemistry, as well as his more famous "Principles of Chemistry," had wide use and great influence. Furthermore, he took an active interest in the development of the industrial resources of Russia, especially in connection with the petroleum industry. It is interesting in connection with current topics to learn that over thirty years ago Mendeléeff was occupied in vigorously attacking a monopoly that controlled the oil fields at Baku. In this attack he was successful, and in connection with the development of the oil fields he made a thorough study of the petroleum industry, including a visit to the Pennsylvania fields.

GORGAS A MEMBER OF THE ISTHMIAN CANAL COMMISSION.

The appointment of Col. W. C. Gorgas as a member of the Isthmian Canal Commission is of more than ordinary importance to the country and to the medical profession. At the time of the original organization of the Commission, in 1904, it will be remembered that the American Medical Association, through its Committee on Medical Legislation, made strong representations to the President, urging that Dr. Gorgas be made a member of the Commission.

The chief grounds on which the appointment was urged were: 1, that the sanitary problems at the Isthmus were strictly fundamental to the great enterprise; 2, that the officer placed in charge of a department of such paramount responsibility ought to have coördinate, if not autonomous, power in the executive body—in no event being made subordinate to those ignorant of the technical questions involved, and, 3, that the medical profession as such, by virtue of its intellectual, social, political and commercial status alone, was entitled to representation on governmental bodies vested with executive function and dealing in a large way with sanitary problems. While the request was denied, Colonel Gorgas was designated as Chief Sanitary Officer under an executive commission, the controlling spirits of which had no adequate conception of modern sanitation. As a consequence, such men were inimical to many of the most sa-

lient features of the necessary campaign against the perennially endemic diseases prevailing on the Isthmus. The status of Colonel Gorgas and of the sanitary department under this arrangement was shown, in the report of Dr. Reed, as chairman of the Committee on Medical Legislation, after a visit to the Isthmus in February, 1905, to be one of subordination successively " . . . to the Governor of the Zone; to the Chief Disbursing Officer; to the chief of the Bureau of Material and Supplies; to Mr. Grunsky (special committee on sanitation); to the Commission; to the Secretary of War; to the President; subordinated, in fact, in the seventh degree from the original source of authority. . . . One can not but be impressed," continued the report, "with the anomalous condition by which a man of Colonel Gorgas' distinction, the foremost authority in the world in solving the peculiar problems connected with sanitation on the Isthmus, being made a mere instrument in the hands of a whole series of men who confessedly are ignorant of the very questions with which he is the most familiar."

The publication of this report was speedily followed by material improvement in the status of the Sanitary Department on the Isthmus. It was not, however, until the President visited the Zone and personally investigated conditions, apparently, that he became convinced of the wisdom embraced in the recommendations of the American Medical Association, made three years previously. Immediately on his return, he announced his intention, which he has finally carried out, to appoint Colonel Gorgas as a member of the Commission.

As before stated, this is a step of great importance to the medical profession and to the country. It is a recognition of the principle that, in public station, the medical profession ought, of right, to be placed in executive control of its own science; it is a recognition of the capacity of physicians to serve in high administrative capacity, and it is a recognition of the right of the medical profession to distinguished consideration at the hands of the Chief Executive. The improved status of the Sanitary Department on the Isthmus is a further guarantee to the country that the great work of connecting the two oceans will be prosecuted with the least possible prospect of delay caused by epidemics such as defeated the French in both of their efforts to dig the canal.

The appointment, in its personal aspects, is a just appreciation of the valuable services of Colonel Gorgas. His long career in the army brought him in contact with yellow fever on the Rio Grande and elsewhere. During the Spanish-American War he was identified with Reed, Carroll and Lazear in establishing the mosquito theory of yellow fever; and, placed in absolute control of Havana (through the intelligent action of Colonel Leonard Wood, himself formerly of the Medical Corps), he was the first man in the world to reduce the scientific accuracy of that theory to a positive demonstration. His work on the Isthmus, in spite of the early embarrassments to which he was subjected, has been crowned with the highest success, showing the entire possibility of completing the great task to which the country stands committed. If we have felt that this action of the President was tardy, that feeling is now effaced in recognition of the judgment and justice—to say nothing of the progressive views—that he has displayed in appointing Colonel Gorgas to membership on the Commission.

THE PREVALENCE OF GONORRHEAL INFECTION.

Some weeks ago[1] we called attention to the series of papers dealing with venereal diseases, read at the Boston session of the Association, the remote effect of these diseases on married women, and the physician's duty to the public in connection with this question. Shortly before Erb[2] of Heidelberg, in a valuable paper, gave the results of his own experience in the matter of gonorrheal infection and came to the conclusion that the figures usually cited as giving accurate data as to the prevalence of gonorrhea are erroneous, the error being on the side of over-estimation. Erb had been collecting data bearing on the subject for some time, but his views were, perhaps, directly called forth by a paper of Blaschko, which contained figures purporting to show that every man who did not marry until the age of 30 had had gonorrhea at least twice. Previous to Blaschko's paper the figures of Lesser, Ricord and Doctor were those most frequently cited, these authors giving the percentage of males who contracted gonorrhea as over 80. Erb's study, which had in view both the determination of the frequency of gonorrhea in the male and the subsequent effect on the wife, led him to place the figures lower than other observers and to view the whole matter in a more optimistic light. He concluded that about 49 per cent. of men had gonorrhea before marriage, most of them contracting it before the age of 25. He also argued that at least 45 per cent. of the infected men recover so that no traces of the disease are left, a view quite at variance with that held by some well-known genito-urinary surgeons. Erb also concludes that not more than 4.5 per cent. of married women are seriously infected with gonorrhea by their husbands.

Erb's figures have called out a reply from Blaschko and a paper relating especially to the infection of the wife, by Vörner.[3] Blaschko objects to Erb's statistics on the ground that they are "retrospective" and based on the patients' statements rather than on the actual observation of facts; he also calls attention to a fact that Erb himself admits, viz.: that Erb's statistics refer to a particular class of patients and are not applicable to all classes. The difficulty of getting patients to speak the

1. THE JOURNAL A. M. A., Dec. 22, 1906, p. 2094.
2. Münch. med. Wochschr., No. 27, 1906.
3. Münch. med. Wochschr., Jan. 29, 1907.

truth in such matters is very properly emphasized, and figures collected from various sources are cited to show that Erb's statistics are too low. Vörner presents no actual figures, but also reaches the conclusion that Erb receives the statements of his patients with too much credulity.

Every practitioner must appreciate the great difficulty of collecting data on a subject of this sort. Doubtless the variations in the different figures are partly due to this element. It must be recognized, too, that figures vary greatly according to locality, those for the great cities being largest and those from the country being smallest. Making allowance for all these sources of error, the percentages as they stand are appalling. The amount of disease and misery caused by gonorrheal infection must be immense. We can but repeat our remarks of two months ago and urge on every physician a personal interest in the matter, which must be fought by education rather than by legislation.

CHRONIC APPENDICITIS WITHOUT DEFINITE ATTACKS.

The history of most cases shows that the atypical forms become well known long after the typical ones are generally recognized. This is true of appendicitis, in which disease the classical picture with acute onset, localized pain and tenderness over McBurney's point is now known to every physician, but certain chronic forms are less often recognized. The fact that there are chronic cases in which there are no definite attacks and but few symptoms directly referable to the appendix has been recognized for some years. Ewald spoke of this type of appendicitis as "appendicitis larvata," but the term has not come into general use. There is little doubt that cases of this character are frequently overlooked and diagnosed as intestinal indigestion or dyspepsia. They do not belong to the class of cases which reach the surgeon early, and, as a rule, the surgeon is more expert at detecting the atypical varieties of appendicitis than is the general practitioner.

The clinical picture presented by these patients has recently been summarized by Klemm.[1] At first sight the patient gives the impression of one suffering from some chronic gastrointestinal disorder rather than from a localized condition. The symptoms are mainly those of a catarrh of the large intestine, and many cases are so diagnosed. The patient may have diarrhea or constipation, or the two conditions may alternate; there is often a feeling of fulness and discomfort after meals, some pain in the neighborhood of the right iliac fossa is rather common, and this may radiate to the epigastrium, the umbilicus, or the left side. The pain is increased by long standing or even long sitting, is severe enough to make the patient restless and irritable, but is at first not wearing enough to lead him to consult a physician. Stomach symptoms may occur in some patients, but are not so common as intestinal ones. When present they take the form of anorexia or eructations occurring immediately after meals.

Physical examination of these patients shows in many instances some tenderness over McBurney's point and at times a palpable appendix. In some cases there is a visible swelling in the right flank from a gas-filled cecum, the so-called "air-cushion" symptom. In occasional patients there is a slight daily rise of temperature above the normal and persisting for months. The recognition of this type of appendicitis is important, as the condition is intractable under medical treatment, and is only to be permanently remedied by operation.

1. Mitt. aus den Grenzgeb. der Med. und Chir., December, 1906.

RITUALISTIC SANITATION OF THE JEWS.

In an interesting article in the *Saturday Evening Post* Dr. Solomon Solis-Cohen, Philadelphia, points out in what manner and to what extent the sanitary regulations prescribed by the Jewish religious teachers have anticipated and are in accord with the best teachings of modern hygiene. It has long been claimed that the Jews are less subject to many contagious diseases and have an average greater longevity than other peoples and their immunity is said to have been specially noticeable during the great epidemics that from time to time have ravaged Europe. The aseptic methods of modern times are paralleled largely by the old Mosaic law which has been enlarged on by the rabbinical commentators. Even the regulations for government inspection of meats recently adopted in the United States, Dr. Cohen says, are less thorough and strict than those of the Jews. Only in the matter of inspection of milk, fruits, cereals, eggs, etc., has modern science and legislation distinctly advanced beyond that of the rabbis and he questions whether or not there was the same necessity in their day. We might also ask if there is the same necessity for the Jewish dietetic regulations in some climates, differing from that of the original seat of the Jewish race; certain parts of the world might be less habitable under the Mosaic dietetic rules. Be this as it may, there can be no question that the effect of these regulations has been salutary and that ritualistic cleanliness is the secret of a large part of the apparent Jewish immunity from certain forms of disease. There may be a question, of course, as to whether or not the enforced conditions of life of a great portion of the Jewish people, through so many centuries, have not endowed them with a certain degree of immunity such as probably exists among most civilized races toward certain diseases which, comparatively mild among them, become devastatingly fatal epidemics when introduced into the virgin soil of savage races. The white race, for example, is probably almost saturated with tuberculous infection, but resistance has been gained which makes it comparatively harmless to three-fourths of civilized mankind. The mass of the Jewish race has been living for hundreds of years under most unhygienic conditions as regards this particular infection, and with this, aided by their religious sanitary observ-

ances, they may have acquired a still greater resistance to it than the rest of us. On the other hand, they have acquired a certain neurotic predisposition, a condition apparently not guarded against by aseptic rules, but one, as the late Dr. Beard used to claim, accompanied by a certain degree of apparent immunity to some other diseases. Racial peculiarities and their relation to hygienic practices form an interesting subject for study, which has not been very thoroughly worked out even in the case of the Jews. Such contributions as that of Dr. Solis-Cohen are valuable as giving the public useful ideas, and it would not be a bad thing were the often quoted aphorism of a more recent religious reformer, "cleanliness is next to Godliness," more actively incorporated into the religion of the non-Jewish races generally.

THE URINE IN CONTRACTED KIDNEY.

The work of Cabot and others has shown how frequently the text-book picture of the urinary changes in kidney disease fails to correspond to the changes seen in actual practice. In chronic interstitial nephritis we have flattered ourselves that the urinary changes are apt to be characteristic, likewise the high arterial tension and the cardiac hypertrophy. Nagel[1] has recently analyzed the urinary and other changes in a number of undoubted cases of contracted kidney, and shows that some of the signs generally accepted as being almost constant are far from being so. Thus, polyuria occurs in only one-third of the cases, a normal amount of urine being secreted in a second third, and a condition midway between polyuria and oliguria existing in about one-fifth of the cases. Increased blood pressure is present in a little under three-quarters of the patients, and clinically appreciable heart hypertrophy in a little over four-fifths. Night polyuria occurs in only one-quarter of the patients, while uremia occurred in every case observed. These findings serve to emphasize the remarks previously made[2] regarding the necessity of correlating the clinical and laboratory findings before making a diagnosis, and they also suggest the necessity of avoiding a too strict adherence to the text-book pictures of disease. Students of medicine often refuse to decide on a diagnosis because they expect too close a correspondence to the text-book description.

FREAK LEGISLATION.

With the present winter sessions of the state legislatures we may look for proposals for irrational and impracticable laws. Some such measures have already been announced. We hardly expect homicide of incurables to come up again—this year at least—as the verdict of public opinion has been so pronounced against it. We may, however, include under the general head of "freaks" such propositions as one to prevent the propagation of degeneration by surgery, and one to compel physicians and surgeons to go "whiskerless' and beardless. It would only be a step further to require them to be bald. Some persons are so organized that they can not help going to extremes. If we are to credit the press, laws are being considered in a western state that will compel each county clerk to publish quarterly a list of physicians, with the numbers of deaths that have occurred under their charge; another that shall prohibit a physician charging more than a set schedule of prices; still another providing that a physician shall not be able to collect his bill should the patient decide he had received no benefit from treatment, and yet one more which states that should a patient die while under treatment the physician's bill for services must be canceled. We suggest that legislation along this line might be amplified. All pastors who fail to regenerate their entire congregations should have their salaries cut down proportionately to the *per capita* failures among their flocks; every lawyer who does not succeed in getting a verdict for his client should be unable to collect any fee for his services; all "patent-medicine" manufacturers should be required to sell their products at not more than 25 per cent. advance over the cost price, and on the "no cure, no pay" basis, etc. The field of class legislation is large and tempting.

COEDUCATION.

The system of education which provides for the teaching of boys and girls and of young men and young women together has been in vogue in the United States for some time, and until recently appeared to have found favor with all classes of the community. A section of the general public, however, has, during the past two or three years, evinced a change of attitude on the subject and there is a tendency to question the benefits of coeducation. Dr. G. Stanley Hall voices these objections and expresses the fear that girls brought up with boys will lose some of their feminine charm, while the boys, on the other hand, will take on some feminine characteristics. At the same time that America is inclined to doubt the merits of coeducation, Great Britain is adopting it with some degree of enthusiasm. Experiments in this direction are going on in different parts of England, and a large public school is to be opened soon at which the system will be given a thorough trial. Of course, it is difficult, indeed impossible, to state offhand and definitely what the results of coeducation in America have been. On the whole, it may be said that the result so far as the woman is concerned, will compare favorably with that in other countries, and it may be asserted also that the American man as yet has exhibited no such marks of effeminacy as will warrant the fear that the vigor or vitality of the nation is endangered. Viewed from a purely medical standpoint, there are certain features of coeducation which at least require consideration. An article published recently,[1] which dealt briefly with the subject, expressed the opinion that, although a woman should be so equipped that she may be able to make her own way in the world, she should not be allowed to overexert her mental faculties at the expense of her bodily health. During the period of adolescence, coeducation perhaps might well be aban-

1. Deutsch. Arch. f. klin. Med., January, 1907.
2. THE JOURNAL A. M. A., Jan. 26, 1907, p. 333.

1. The Lancet, Dec. 8, 1906.

doned, but the whole matter requires much further consideration from a medical standpoint before dogmatic statements can with fairness be made.

POLLUTED WATER AND EPIDEMIC DIARRHEA.

The letter[1] from Warren, Pa., printed in this issue is a contribution to an important, if little understood, problem. On several previous occasions extensive outbreaks of intestinal disturbance have been reported in connection with the use of contaminated water. One of the most thoroughly studied of these cases is that recorded by the well-known British health officer, Dr. Thresh.[2] In that epidemic, which occurred at Chelmsford, England, there were about 1,400 cases, mostly among adults, and fourteen deaths. The original source of the water supply was apparently not exposed to infection. The initially pure water, however, was passed into a small uncovered reservoir, through which it flowed to mix with water from a spring in a larger covered reservoir. The small reservoir was not bricked over above the ground level, and during a heavy rain water from the immediate surroundings could run directly into it. Adjoining one end of the reservoir was a garden patch which had been manured from time to time with road scrapings. The outbreak of the epidemic followed heavy rains falling after three rainless weeks. The incidence of the intestinal trouble in this particular outbreak was very striking, all the deaths and practically all the cases being among persons using the implicated water, while other persons in the same borough and in neighboring towns were exempt. On epidemiologic grounds, therefore, there seemed every reason for attributing this outbreak of diarrhea to water pollution. The similarity of the Chelmsford outbreak to the recent outbreak in Warren is marked, even to the probable contamination of the wells with surface washings. We can not regard it as settled, however, that the colon bacillus found in the water was the specific cause of the trouble. Little or nothing is known regarding the germ or germs causing such epidemics of diarrhea, and it is practically certain that, no matter what the specific cause, *B. coli* would be found in contaminated waters of this character just as, for example, it would be found in a polluted water that gave rise to typhoid fever. The trouble at Warren would seem to emphasize the need for protecting reservoirs, storage basins and the like from surface drainage.

WHAT LEGALLY CONSTITUTES THE PRACTICE OF MEDICINE.

As will be seen in the Medicolegal Department in this issue, the New York County Medical Society, after years of waiting and endeavor, has succeeded in obtaining from the Appellate division of the Supreme Court a legal definition of the term "practice of medicine," which should afford it the most valuable aid in the campaign which it has so long been carrying on against quackery. Hitherto the question has not been fairly raised before the higher court, but the decision finally obtained seems to cover the ground and takes from the illegal practitioners what they have heretofore depended on for their chief support. It remains to be seen how far it will affect the Eddyites, who deny the existence of disease and yet take exorbitant compensation for modifying its course by their alleged influence with the higher powers. The point made by the court as regards diagnosis is a forcible one and it is rather remarkable that it should have been ignored by any state court in its decisions, and especially that there should have been on record in New York State any decision that would seem to ignore it. This decision ought also to be of value in the effort to defeat the bill legalizing osteopathy before the New York Legislature. It also adds one more to the many judicial opinions that help to make up the body of the law on this subject throughout the country and to put the question of what constitutes the practice of medicine on a rational basis.

STATE CARE OF INEBRIATES.

A bill is now before the Pennsylvania Legislature providing for the erection of a state hospital for the detention, care and treatment of persons addicted to the excessive use of alcohol or certain poisonous drugs—opium, chloral, cocain—and who are designated as inebriates, dipsomaniacs or drug habitués. Two other states are successfully conducting asylums for inebriates and the results so far have been gratifying. Modern views on inebriety tend to confirm the theory, as Dr. Butler[1] declares, that the excessive use of alcohol and enslaving drugs is due to a diseased condition and one amenable to proper treatment. While there may be some doubt as to the original responsibility for the disease in some cases, there is not so much question as to its being due, in large part at least, to an unfortunate heredity, the tendency often being aggravated by an unfortunate environment. Hence, the call for a certain degree of state care for this class of cases is not an unreasonable one, and such care is well worth taking if it can make useful citizens out of even a small proportion of those who, through original defect and bad environment, have become not merely useless but dangerous members of society. The present method of sending advanced alcoholic cases to asylums for the insane is objectionable in many ways, as every asylum medical official can testify, and is not justifiable if better means are available. That better methods are possible in any state whose public charities are not politically controlled need not be seriously questioned. The Medical Society of the State of Pennsylvania is actively endorsing the bill which is pending in that state and it is to be hoped that its wishes will be fulfilled. We may add that similar plans might well be instituted in other states.

1. Correspondence Department, page 815.
2. Brit. Med. Jour., Sept. 26, 1903.

1. Butler (George F.): Care and Treatment of Inebriates, THE JOURNAL A. M. A., Feb. 23, 1907, p. 680.

Medical News

ALABAMA.

Personal.—Dr. William A. Burns, Sheffield, has been appointed inspector of the convict board, vice Dr. Nathaniel G. Clarke, Ensley.——Dr. John J. Horton, Huntsville, left for Nashville, Tenn., February 6, to undergo operation.

Anticocain and Pharmacy Bills Combined.—By agreement the Marritt anticocain bill, which prohibits the sale of cocain, morphin and similar drugs without the prescription of a reputable physician, and Dr. Lovelady's bill, regulating the practice of pharmacy, have been merged into one law.

Health Officers Named.—The Jefferson County Medical Society, which is legally the Board of Health of the county, elected the following health officers for the thirteen municipalities in the county outside of Birmingham: Drs. Samuel R. Caffey, Avondale; Joseph S. Winters, Bessemer; Francis S. Pugh, Brookside; Luckey A. Jenkins, Cardiff; Thomas A. Jones, East Lake; Jesse E. Robbins, Ensley; George W. Brown, Pratt City; Robert L. Mitchell, Warrior; William C. Gewin, West End; Alse W. Bell, Woodlawn; Joseph H. Edwards, Wylam; Ethbirt C. Rosamond, North Birmingham, and John W. Howard, Irondale.

Society Elections.—The Calhoun County Medical Society, at its annual meeting in Anniston, elected the following officers: President, Dr. William Y. White, Anniston; vice-president, Dr. Mark J. Williams, Oxford, and censor, Dr. John M. Whiteside, Anniston.——Walker County Medical Society held its annual meeting at Jasper, January 18, and elected the following officers: Dr. George S. Gilder, Carbonhill, president; Dr. Howard J. Sankey, Nauvoo, vice-president; Dr. Titus Manasco, Carbonhill, secretary; Dr. William M. Cunningham, Corona, censor, and Dr. Andrew M. Stovall, Jasper, county health officer.——At a meeting of the Morgan County Medical Society, held in Decatur, February 7, Dr. Able R. Wilson, Hartsells, was elected president; Dr. B. Walne Watson, New Decatur, vice-president; Dr. J. L. Gunter, New Decatur, secretary-treasurer, and Dr. Scott L. Rountree, New Decatur, county health officer. The society decided to establish a minimum of $5 for examination for "old line" life insurance companies.

ARKANSAS.

Hospital Construction Progresses.—The Davis Hospital, Pine Bluff, which is now under construction, has already on hand about $20,000 of the $30,000 required to complete the building.

License Revoked.—In the case of Dr. Thomas E. Rider, Hot Springs, charged with "drumming," Judge Bent revoked the license of the defendant to practice medicine and fined him $150.

Newspaper Publicity.—The Jefferson County Medical Society, at its February meeting, unanimously decided to request all members of the society to refrain from giving out information to the lay press regarding professional matters.

Society Meetings.—The president of the state society has addressed a communication to the county medical societies, urging that the anti-drumming regulations provided by the federal medical board be strictly observed.——At the recent meeting of the Union County Medical Society, held at El Dorado, Dr. John A. Moore, Lisbon, was elected president; Dr. Samuel E. Thompson, El Dorado, vice-president; Dr. Joseph B. Wharton, El Dorado, secretary; Dr. James M. Sheppard, El Dorado, treasurer; Dr. H. H. Niehuss, Wesson, delegate to the state society, and Dr. Edward F. Hamm, Shuler, alternate.——At the annual meeting of the Mississippi County Medical Association, held in Blytheville, February 14, the following officers were elected: Dr. Carlos C. Stevens, Blytheville, president; Dr. Oleander Howton, Osceola, vice-president; Dr. Thomas G. Brewer, Osceola, secretary-treasurer, and Drs. Thomas G. Brewer, Osceola, and S. P. Martin, Chickasawba, delegates to the state society.——At a meeting of the Craighead County Medical Society, held in Jonesboro recently, Dr. Charles M. Lutterloh was elected president; Dr. William C. Haltom, secretary and delegate to the state society, and Dr. Hugh L. Rains, alternate, all of Jonesboro.

CALIFORNIA.

Antivaccination Law Defeated.—The bill of Assemblyman Sackett, repealing the present general vaccination law was defeated by four votes, only 37 out of the 41 votes required being in favor of the bill.

New College Building Dedicated.—The new building for the College of Physicians and Surgeons, San Francisco, was formally dedicated January 18. Dr. Winslow Anderson, president of the institution, delivered the address of welcome.

State Sanatorium for Consumptives.—The first step toward the establishment of a sanatorium for the treatment of tuberculosis was taken to-day by Senator Keane, who introduced a bill appropriating $150,000 for the purchase of a site and the erection of a building.

Banquet to Governor Pardee.—A banquet and reception in honor of Dr. George C. Pardee, ex-governor of California, was given January 28 by the Alameda County Medical Association, of which Dr. Pardee is a member. Dr. Daniel Crosby, Fruitvale, acted as toastmaster and delivered the address of welcome, to which Dr. Pardee made suitable reply.

Medical Library Dedicated.—A formal dedication of the Medical Library donated to the medical profession of Los Angeles by Dr. W. Jarvis Barlow took place February 8. Dr. Barlow made a brief address, at the close of which he presented the deed of the property and the keys of the library to the Clinical Association. Dr. Joseph Kurtz, president of the association, accepted the trust. The building alone without the grounds cost Dr. Barlow $32,000.

Hospital Notes.—The Santa Monica Bay Hospital opened for the reception of patients March 1.——The Claremont Hospital Association, Oakland, has been incorporated with a capital stock of $175,000 by Drs. Hayward G. Thomas, Frank L. Adams, Oliver D. Hamlin and Edward N. Ewer, all of Oakland, and Dr. George F. Reinhardt, Berkeley.——The Southern Pacific Railway Company has decided to build a modern hospital on the land it recently purchased for $150,000 near the Park Panhandle, San Francisco.

Medical Licensure.—A bill has been introduced into the legislature doing away with the separate board for licensing osteopaths and placing full control of medical license in the hands of a composite board. Two osteopaths are placed on this board. Examination on therapeutics, etc., has been done away with, and applicants are required to pass an examination in all fundamental branches. The reciprocity clause has been dropped and five credits are allowed for each ten years of reputable practice. It is believed that this bill will be passed.

Ill and Injured.—Dr. W. G. Galbraith, Los Angeles, chief surgeon of the Greene Consolidated Copper Company, Cananea, Mexico, is seriously ill at his home.——Dr. Charles H. Thompson, Santa Rosa, who has been seriously ill, is reported to be convalescent.——Dr. Charles E. Stone, Maryville, has recovered from his recent illness.——Dr. Walter C. Smiley, Long Beach, lost his balance and fell from a trolley car, January 31, dislocating his shoulder and sustaining severe scalp wounds and also concussion of the brain.——Dr. W. T. F. Smith, San Francisco, was struck by an automobile, January 31, and suffered severe contusions and sprained his right ankle.——Dr. Martin Schnabel, Newcastle, was thrown from his buggy recently and badly bruised.——Dr. William J. Wickman, San Rafael, was thrown from his buggy in a runaway accident and fractured his left arm.

Personal.—Dr. Sidney R. Daunenbaum, Berkeley, will leave for Europe in a few days.——Dr. Ferdinand Stabel, Redding, has been appointed medical examiner for the twelfth civil service district.——Dr. Ethel L. Leonard has been appointed bacteriologist to the health department of Los Angeles.——Dr. Edward R. Taylor has been elected president of the Lane Hospital, San Francisco, vice Dr. C. N. Ellinwood.——Dr. Luther M. Powers has been reappointed health officer of Los Angeles.——Dr. James W. Wood, Long Beach, is taking a trip to Rochester, Minn., and New York City.——Dr. R. Edmond Dixon, Hanford, has been elected physician of Kings County.——Dr. Marcia Gilmore, Pasadena, has returned from a visit to Chicago.——Dr. Samuel S. Bogle, Santa Rosa, has been reappointed physician of Sonoma County.——Dr. George T. Hesser, Folsom City, has been appointed health officer of Sacramento County, and Dr. George L. Stevenson, Sacramento, physician at the dispensary.——Dr. Dudley Tait, San Francisco, has been elected corresponding member of the Surgical Society of Paris.

Society Meetings.—At the annual meeting of the Redlands Medical Society the following officers were elected: President, Dr. Walter B. Powers; vice-president, Dr. Charles E. Ide, and secretary, Dr. John L. Avey.——At a meeting of Contra Costa County Medical Society, held in Martinez January 20, Dr. Frank Rattan, Martinez, was elected president; Dr. Francis F. Neff, Concord, vice-president; Dr. J. Walter Key, Crockett, secretary; Dr. A. H. White, Crockett, assistant secretary; Dr. Jahial S. Riley, Crockett, treasurer; Dr. Joseph T. Breneman, Martinez, delegate to the state society, and Dr. Hawley N. Barney, Point Richmond, alternate.——At a meeting of Fresno County Medical Society, Dr. John R. Walker was elected presi-

dent; Dr. Asbury N. Loper, vice-president; Dr. L. R. Willson, secretary, and Dr. Thomas M. Hayden, treasurer, all of Fresno. ——At the annual meeting of the Sonoma County Medical Society, Dr. James R. Swisher, Healdsburg, was elected president; Dr. James H. McLeod, Santa Rosa, vice-president; Dr. Reuben M. Bonar, Santa Rosa, secretary, and Dr. Lizzie Lain, Santa Rosa, treasurer.——At a meeting of the Long Beach Medical Society, held January 16, Dr. Frank L. Wood was elected president; Dr. Frances L. Rogers, secretary-treasurer, and Dr. Homer O. Bates, councilor.

ILLINOIS.

Damage Suit Dismissed.—The Varvil suit for malpractice in which damages of $10,000 were sought against Dr. Albert L. Ward, Bement, in the Piatt County Circuit Court, has been dismissed.

Colony for Epileptics.—Dr. W. P. Spratling, superintendent of the New York State Colony for Epileptics, Sonyea, gave an address in the senate chamber, Springfield, February 26, on the colony treatment of epileptics, under the auspices of the Children's Hospital Society, Chicago.

Personal.—Dr. Charles E. Donahoo, Hillsdale, is ill with scarlet fever.——Dr. Harry B. Bailey, Rockford, was operated on for appendictis at St. Anthony's Hospital, February 13.——Dr. Frederick A. Renner has removed from St. Jacob to Benld.——Dr. William J. Rideout, Freeport, sailed last week for Europe.

Hospital Notes.—The women of East St. Louis have organized a ladies' auxiliary in the interests of the Henrietta Hospital. The first work which they will undertake will be the erection of a dormitory for nurses, so that the quarters now used for that purpose may be devoted to a children's ward.——A movement is on foot to erect a hospital at Benld, Macoupin County.

Chicago.

Children's Hospital Benefit.—On the evening of March 11 Maude Adams will give a performance of "Peter Pan" for the benefit of the Children's Hospital Society.

Personal.—Dr. Frank Billings and daughter sailed for the Mediterranean, February 19.——Dr. William J. Butler left for Europe, February 23.——The case against Dr. Wilbur V. Johnson, charged with assisting in an illegal operation, was dismissed February 15.

Mortality.—The number of deaths for the week ended February 23 was 707, 9 more than for the previous week and 113 more than for the corresponding week of 1906. This mortality is equal to an annual death rate of 17.49 per 1,000. Pneumonia caused 161 deaths; consumption, 79; heart diseases, 50; violence, including suicide, 46; nephritis, 42; scarlet fever, 27; cancer, 25; diphtheria, 20, and whooping cough and typhoid fever, each, 8.

Infectious Diseases.—During the week, ended February 23, the cases of diphtheria, measles and scarlet fever have shown a decided and substantial reduction. The reduction has been steady and dates from the week the medical inspectors were put to work. This emphasizes the necessity of a permanent medical inspection corps for public schools.——Two cases of smallpox were discovered during the week and sent to the Isolation Hospital. One patient came from Minneapolis and the other from Lancaster, Canada.

KENTUCKY.

Medical Student Dies.—T. Vernon Gamron, a senior student at the Kentucky School of Medicine, Louisville, died from heart disease at his boarding house recently, aged 24.

Hospital to be Enlarged.—The trustees of the Children's Free Hospital, Louisville, have decided to enlarge their present quarters sufficiently to accommodate twice the number that can be taken care of at present. Funds have been provided for the improvements.

Colored Physicians Organize.—The colored physicians of Louisville organized the Falls City Medical Association, February 5, with the following officers: Dr. William T. Merchant, president; Dr. J. A. C. Lattimore, vice-president; Dr. Ellis D. Whedbee, secretary, and Dr. Percy R. Peters, treasurer.

Illegal Practitioner Arrested.—"Dr." John A. Taff, convicted in the local courts for practicing without a license, he having been running a "locomotor ataxia works," has just been arrested at Evansvile, Ind., where he went after his conviction in Louisville, and returned on requisition. During the trial here he stated he was a graduate of Columbian University, Washington, D. C., and that his wife, from whom he is divorced, had the diploma. Investigation indicated that he has never obtained a diploma from Columbian University, and he was arrested for perjury and will be tried in Louisville on that charge.

MARYLAND.

Unlicensed Practitioner Fined.—For practicting medicine without first having registered, "Dr." J. F. Wagner, Hagerstown, is reported to have been fined $50 and costs February 2.

Hospital Equipment Sold.—The Frederick County Hospital Association, which formerly conducted the Emergency Hospital in Frederick, has sold the equipment of the latter to the Union Hospital Association, which has recently purchased a building and hopes to open a hospital.

Prevention of Tuberculosis.—On February 14 Dr. William S. Thayer, Baltimore, addressed the Washington County Medical Society at Hagerstown on tuberculosis and the need of carrying out the laws for its prevention. On the same evening addresses were made by Dr. Thayer and Mr. H. Wirt Steele, executive secretary of the Maryland Association for the Relief and Prevention of Tuberculosis, at a public meeting in Hagerstown. A branch association was formed for that section.

Officers Elected.—At the annual meeting of the Maryland Association for the Relief and Prevention of Tuberculosis, held in Johns Hopkins University, February 12, Dr. William H. Welch presided in the absence of the president, and the following physicians were among the officers elected: President, Dr. Henry Barton Jacobs, Baltimore; honorary president, Dr. William Osler, Oxford, England, and vice-presidents, Drs. James Bosley, Baltimore; Hiram Woods, Baltimore; John S. Fulton, Baltimore; Joshua W. Hering, Westminster; Richard S. Hill, Upper Marlboro; Henry M. Hurd, Baltimore; Samuel T. Earle, Baltimore; Thomas L. Shearer, Baltimore; Mary Sherwood, Baltimore; William S. Thayer, Baltimore; Isaac R. Trimble, Baltimore; William H. Welch, Baltimore; Charles M. Ellis, Elkton, and Louis B. Henkel, Jr., Annapolis.

Baltimore.

Bequest.—In accordance with the expressed wishes of the late Bernard Kohn, his children have given $2,500 to the Consumption Hospital and $500 each to the Hebrew Hospital and the Nursery and Children's Hospital.

Site for Sanatorium Selected.—It is announced that the Maryland Tuberculosis Commission has elected a site, consisting of 240 acres, for the proposed state sanatorium for tuberculosis on South Mountain, near Sabillasville, 66 miles from Baltimore.

Visiting Nurses' Report.—At the annual meeting of the Instructive Visiting Nurses' Association, held February 11, it was reported that eight nurses are now employed; that 22,336 calls were made during the year, and that, on January 1, 500 cases were under care.

Addition to Hebrew Hospital.—The plan of the Dr. Samuel L. Frank memorial addition to the Hebrew Hospital calls for a four-story building with basement and subbasement, with a frontage of 93 feet and a depth of 58 feet. It will be connected with the present hospital by a corridor. The donation for the erection and equipment amounts to $84,000.

Result of Public School Inspections.—The medical examiners in the public schools report that 12,109 children were examined in January. Of that number, 4,362 were found to have defects or ailments and 118 were excluded. The principal defects or ailments were: Blepharitis or sore eyes, 135; strabismus, 80; eye-strain, 604; pediculosis, 1,436; imperfect teeth, 452; adenoids, 597; mental deficiency, 45; skin diseases, 91; enlarged tonsils, 1,344, and unvaccinated, 256.

Personal.—Dr. Charlotte S. Murdoch, who has been associated with the work of Dr. G. Campbell Morgan, London, for some years, has been visiting in Baltimore and will sail for Shanghai from San Francisco March 8.——Dr. Arthur Wegefarth was thrown from his buggy February 18 and seriously injured.——Dr. Adolph Eisenberg sustained painful injury to his shoulder by being thrown from his buggy.——Dr. Howard A. Kelly was given the degree of LL.D. by the University of Pennsylvania February 22.

MASSACHUSETTS.

Personal.—The Brockton Hospital elected the following officers: Vice-president, Dr. Amasa E. Paine, and executive committee, Drs. Jesse H. Averill, Samuel J. Gruver, N. C. King, Arthur L. Beals and Fred S. Faxon. The medical board will include in addition Drs. Henry F. Borden, Jonas E. Bacon, Frank E. Constans and Frederick J. Ripley.——Dr. Louis Z Normandin has been appointed a member of the board of health of New Bedford.——Dr. William W. Hartwell has been

elected city physician of Malden, and Dr. Charles E. Prior has been elected a member of the board of health, vice Dr. Charles D. McCarthy, recently elected mayor.——Dr. Frank G. Wheatley, Abington, has been nominated by the governor as associate medical examiner for the second Plymouth district.——The appointment of Dr. George B. Magrath, Boston, as medical examiner for a portion of the Suffolk district has been confirmed by the council.——Dr. Charles H. Thomas, Cambridge, has been appointed a member of the local board of health, and Dr. Albert P. Norris, milk inspector.——Dr. Frank D. Stafford has been inaugurated for the third time as mayor of North Adams.——Dr. Agavinie Gilbakian, Boston, has been recommended as medical missionary to India by the Women's Society of the United Presbyterian church.——Drs. Timothy J. Daly, Robert W. Forster, John B. Bain, Albert W. Hancock and L. G. Beeley have been appointed physicians of the Lawrence General Hospital.

MINNESOTA.

Endowment for Hospital.—Matthew G. Norton, lumberman of Winona, has announced that he has settled an endowment of $50,000 on the Winona General Hospital. The endowment is in the form of New York City bonds, maturing in 1956, with interest at the rate of 4 per cent. per annum, bringing the total amount of the gift up to $150,000.

Smallpox.—Smallpox is reported from Frazee, where several cases exist.——In the country around Bemidji five new cases of smallpox have been found.——At the last session of the Biwabik village council, it was decided that the village is not responsible for the cost of the care of smallpox patients.——At the Pacific Hotel, Minneapolis, 5 new cases have been reported.——There are at present in the Isolation Hospital, Duluth, 15 cases of smallpox, practically all of which were brought in from unorganized towns and camps throughout the country.

Personal.—Drs. Knut O. Hoegh, Minneapolis, and Eduard Boeckmann, St. Paul, have been made knights of the Order of St. Olaf by King Haakon of Norway.——Dr. Charles W. More, Eveleth, has been elected health officer of St. Louis County.——Dr. Jacob C. Rothenburg, Springfield, has been elected chairman of the board of health of Brown County.——Dr. George S. Wattam, Warren, has been reappointed a member of the advisory commission of the State Sanatorium for Consumptives.——Dr. R. Ignatius Hubert, St. Cloud, has been appointed a member of the Stearns County Board of Health.

State Board of Health Report.—The annual report of the State Board of Health shows that the board received in 1906 an appropriation of $21,000, the same amount which was received 20 years ago, and recommends an increase. It reports that deaths from tuberculosis in Minnesota amount annually to 2,000, and that at the same time there are probably 10,000 individuals suffering from the disease. It calls attention to the fact that the continued prevalence of typhoid fever is a disgrace to the community and should be prevented by care of sewage and water supplies, and also comments on the prevalence of smallpox for the last ten years in the state, and urges the provision of compulsory vaccination laws. During the year 100 people were bitten by rabid animals. Of these 69 went to Chicago or Ann Arbor for treatment. The board urges the establishment of a Pasteur institute, and recommends the passage of a burial permit law that vital statistics may be compiled.

Society Meetings.—The Southwestern Minnesota Medical Association met at Pipestone and elected the following officers: President, Dr. Walter E. Richardson, Slayton; vice-president, Dr. William D. Beadie, Windom; secretary-treasurer, Dr. Emil King, Fulda; delegate to the state society, Dr. George D. Rice, Pipestone, and alternate, Dr. George G. Balcom, Lake Wilson. Windom was selected as the place of meeting in July.——At the annual meeting of the Olmsted County Medical Society, at Rochester, the following officers were elected: President, Dr. John E. Crewe; vice-president, Dr. Fred R. Mosse, and secretary-treasurer, Dr. Justus Matthews, all of Rochester.——A meeting of the Upper Mississippi Valley Medical Association was held at Little Falls, when the following officers were elected: President, Dr. George R. Christie, Long Prairie; vice-president, Dr. John Burton Holst, Little Falls; secretary, Dr. Charles F. Coulter, Wadena; treasurer, Dr. Paul E. Kenyon, Wadena, and censor, Dr. Joseph G. Millspaugh, Little Falls.

Tuberculosis Conference.—The National Tuberculosis Exhibit was shown in Minneapolis, February 2 to 13 inclusive, and created great interest. On February 5, in connection with the exhibit, the Western Conference on Tuberculosis was held. Among the speakers were Dr. Frank F. Wesbrook, Minneapolis; Dr. Arnold C. Klebs, Chicago; Dr. John W. Bell, Minneapolis; Dr. H. L. Taylor, Dr. John S. Fulton, Baltimore, and Dr. John M. Beffel, Milwaukee. At the close of the session the following officers were re-elected: President, Mr. George C. Christian, Minneapolis; vice-presidents, Drs. Charles L. Greene, St. Paul, and Louis B. Wilson, Rochester, and treasurer, Mr. J. H. Skinner, St. Paul. The conference is expected to embrace the states of Ohio, Michigan, Illinois, Indiana, Missouri, Iowa, Wisconsin, Minnesota and the Dakotas. On February 6 the State Association for the Relief and Prevention of Tuberculosis held its session. Dr. Cornelius A. Harper, Madison, Wis., spoke on "Tuberculosis from the Standpoint of a Health Officer;" Dr. James W. Pettit, Ottawa, Ill., on "The Sanatorium Treatment of Tuberculosis," and Dr. Harry A. Tomlinson, St. Peter, on "The District Nurse in Connection with Tuberculosis."

NEW YORK.

To Abolish the Ringing of Church Bells.—The New York Society for the Suppression of Unnecessary Noises is said to be about to begin a movement to abolish the ringing of church bells in cities.

High Birth Rate.—The annual report of the State Health Department shows that the births during the year 1906 outnumbered the deaths by over 40,000. There were in the state 183,012 births, 140,773 deaths and 87,870 marriages.

Marine Hospital.—Ground will soon be broken in Buffalo for the long contemplated marine hospital. It is expected that the building will be completed in a year. It is a three-story and basement building, 114 feet long, with an average width of 62 feet, and will be of brick and stone construction.

Infirmary Completed.—The Lackawanna Steel Company has completed the new dispensary at West Seneca. It is a two-story building, equipped for operative work. Heretofore injured workmen have been give first aid at the dispensary, but when operation was necessary this was done at the Moses Taylor Hospital.

The Census of the Blind.—While the canvass of the entire state is not yet complete, about 5,000 names have been handed in and the commissioner is now ready to begin work. The census shows that there were 184 persons blind or partially blind in Orange County, in Westchester County there were 220, in Rockland 32, and in Putnam 21, making 457 in four counties.

Personal.—Dr. Walter S. Goodale has been appointed tenement and lodging house inspector at Buffalo.——Dr. Frederick J. Barrett, Buffalo, has been appointed an examiner of applicants for pensions or increase of pensions for the eye, ear, nose and throat at Buffalo.——Drs. Harry R. Trick, Charles P. Chapin and Dr. Clark have been appointed trustees and physicians in charge of the Riverside Dispensary, Buffalo.——The Æsculapian Club of Buffalo, on February 6, tendered a dinner to Dr. Ernest Wende. Dr. Francis M. O'Gorman acted as toastmaster.

State Cancer Laboratory Report.—The annual report of the State Cancer Laboratory, Buffalo, announces that researches during the last year confirm the statement made by Dr. Roswell Park in 1898, that cancer shows a progressive and steady increase. This is estimated at 25 per cent. for the last three years. The report recommends that it would be well for health officers to enforce the proper sterilization and disposal of all dressings used on cancer patients, and the proper fumigation of rooms occupied by such patients.

Protest Against Bronx Sewer.—The Merchants' Association has filed a protest with the Secretary of War, declaring that unless the United States government interferes and stops the wholesale dumping of sewage into the Hudson River the harbor of New York will be completely ruined for shipping purposes. They protest especially against the construction of the Bronx Valley sewer. This contemplated sewer would drain the Bronx Valley, providing for the disposal of sewage and manufacturing waste for a population of 850,000 and would empty into the Hudson River north of Spuyten Duyvil.

First-Aid Appliances in Factories.—A bill has been introduced into the legislature providing that every person, firm or corporation operating a factory or shop shall at all times keep, free of charge to the employés, a medical and surgical chest containing all necessary medicines and instruments for first aid to the ill or injured, and that the board of health of each city or town shall see that this act is enforced. The penalty for violating this act is a fine of not less than $5 nor more than $500 for every week during which this violation continues.

Coroner and Medical Examiner.—Since the office of coroner has been abolished in Erie County and that of medical examiner created, there has been much friction with the several district physicians. The medical examiner construed the law to mean that if a person died without medical care and nothing indicated that the death was due to violence, the district physician should issue the death certificate, and that the medical examiner and his assistant should attend only to deaths by violence. In a recent case, the cause of death could not be determined by the district physician, and the medical examiner was asked to issue the death certificate. He refused the request, as there was no reason to believe that the death was due to violence. The corporation counsel of Buffalo, who was asked by the health commissioner to give an opinion, stated that if the city or district physician is not satisfied as to the cause of death, it becomes the duty of the medical examiner to make the necessary investigation.

News from the Assembly.—Coroner Harburg appeared before the cities committee and urged favorable consideration of the bill prohibiting removals from hospitals in New York City. The cities committee gave the matter no consideration and did not report it, but the Senate cities committee, before which Coroner Harburg did not appear, reported the Sohmer bill, prohibiting such removals and prohibiting the superintendent of a hospital to refuse admission to an applicant if brought in an ambulance or other vehicle and not suffering from a contagious disease.——The Wainright bill, which has been introduced into the Assembly, adopts for the state the national food law in every particular.——A bill is pending providing that there shall be four coroners in Manhattan, two in the Bronx, four in Brooklyn, three in Queens, and one in Richmond. ——The Reese bill makes pasteurization of milk a municipal function under the direction of the Health Board and the selling of any milk that has not been put through pasteurizers would mean fine and imprisonment. The bill states that the Health Commissioners shall designate pasteurizing stations to which every quart of milk shall be taken. This would, of course, be in addition to inspecting the source of supply. Under this bill the health board would have authority to seize and destroy any milk found unpasteurized.

Sanitation in the State.—Eugene H. Porter, State Health Commissioner, requires that all cases of tuberculosis be reported to him, with a view of securing definite information on which to base steps to prevent its spread. A sanitary map of the state is being prepared and a systematic study of watersheds and an investigation of stream pollution are being carried on. The continued pollution of the streams of the state must cease and no permits to discharge sewage into the waters of the state will be granted except for very cogent reasons. It is urged that the commissioner should also have authority to order sewage taken out of a stream when necessary and within a given time. It is suggested that a commission ought to be created to coöperate with the Health Department in so important a matter as the pollution of the waters of New York harbor. An inspection of the packing houses, slaughter houses and meat markets showed many to be in bad condition. They have been directed to be put in sanitary shape at once and frequent inspection was urged. Particular attention will henceforth be paid to food stuffs manufactured in this state. A campaign for pure milk throughout the state was urged. During the month of August of 1906 there were 2,339 deaths under two years of age due to diarrhea and enteritis. The necessity for inspecting the eyes of school children was pointed out and it was recommended that the subject of car sanitation receive attention.

New York City.

Trichinosis on Lower East Side.—At present there are eight cases of trichinosis in Bellevue Hospital, four men and four women. They are all from the same locality, the lower end of First avenue, near Second and Fourth streets.

Personal.—At a dinner of the British Schools and Universities Club Dr. John R. Shannon, the retiring secretary, was presented with a loving cup.——Dr. George F. Poole, physical director of the Twenty-third Street Branch of the Young Men's Christian Association, will have charge of all the water sports at the Sportsman's Show which opens March 1 in Madison Square Garden.

Hospital Staff Dine.—The seventh annual dinner of the directors and staff of the Manhattan Eye, Ear, Nose and Throat Hospital was held on the evening of February 19. This was the first dinner since the institution has moved into its new building. Dr. A. Alexander Smith spoke on "The Responsibility of the Hospitals as Educational Institutions." Dr. Frank Van Fleet spoke on "Our Hospital: What It Has Accomplished, Its Requirements and Responsibilities."

Contagious Diseases.—There were reported to the sanitary bureau of this city for the week, ended February 16, 356 cases of tuberculosis, with 191 deaths; 282 cases of diphtheria, with 52 deaths; 263 cases of scarlet fever, with 21 deaths; 248 cases of measles, with 6 deaths; 52 cases of whooping cough, with 6 deaths; 42 cases of typhoid fever, with 12 deaths; 13 cases of cerebrospinal meningitis, with 13 deaths; 91 cases of varicella and 2 cases of smallpox, making a total of 1,349 cases and 301 deaths.

A Building for the Blind.—The New York Association for the Blind wants $100,000 for a building in which to house the association and which will furnish a salesroom for the work of the blind and also quarters for a men's workshop. Andrew Carnegie and Smith Ely have promised $10,000 each and Jacob Schiff $5,000 on condition that the remainder of the fund necessary is raised. It was shown that New York is woefully behind European countries in caring for the blind, many of whom are only waiting the opportunity in order to become self-supporting and useful instead of a burden on the state.

A Hearing on the Milk Question.—There has been a discussion of the milk question before the committee on public health of the Board of Aldermen. Dr. Darlington sent word that his department was at work on a series of experiments to determine the feasibility of pasteurization and the most practical and inexpensive way of carrying it out. There was an ordinance introduced by Alderman Freeman directing that no raw milk should be sold in the city unless it was bottled and sealed under the supervision of inspectors of the Health Department and that the bottle should be sealed by the inspector. There will be several public hearings before reporting to the board. It is the intention of the committee to take advantage of these hearings to examine thoroughly into the conditions under which milk is sold in this city.

Money for Hospitals.—At a meeting of the German Charity Ball committee it was decided to divide the proceeds of that function, amounting to $11,262, among the following institutions: The German Hospital, the Isabella Heimath, St. Marks, St. Francis, the German Poliklinik, the German Society, the Deutscher Frauen Verein and the West Side Dispensary.—— Jacob Ruppert has given $10,000 to the German Hospital and Dispensary for the erection of a building for contagious diseases, and George Ehret gave $5,000 for the purchase from the city of a piece of ground which is to be used for the erection of an additional ward to the hospital.——The $10,000 distributed annually among charitable institutions by the Siegel-Cooper Company will be divided this year among 277 institutions. St. Rosa's Home for Incurable Cancer and St. Joseph's Home for Consumptives are among the institutions receiving $100. Among those receiving $50 are the Home for Crippled Children, the New Rochelle Hospital, St. John's Hospital, the Association for Improving the Condition of the Poor and the Home for the Blind.

PENNSYLVANIA.

Appropriation for Care of Insane.—The House Appropriations Committee has reported favorably on the bill appropriating $2,500,000 for the care and treatment of the indigent insane in state and county institutions for the two fiscal years beginning June 1. Appropriations of $1,590,000 have been made for buildings at the state asylums at Harrisburg, Norristown, Danville, Warren and Wernersville. This will provide comfortable accommodations for 1,950 additional inmates.

Philadelphia.

Internes Wanted.—The examination of candidates applying for service as resident physician in the Presbyterian Hospital, will be held at the hospital Wednesday, April 17, at 7 p. m.

Deaths of the Week.—There were 656 deaths in the city for the week ended February 16, an increase of 61 as compared with the previous week. Of the total number, 92 were caused by pneumonia, 90 by tuberculosis, 66 by heart disease, 42 by Bright's disease, and 39 by typhoid fever.

Diphtheria at Hospital.—Four cases of diphtheria developed at the University Hospital, making a total of seven cases in that institution and one in the Baldwin House, a dormitory of the university. Dr. Robert Grant Torrey, resident at the hospital, has been stricken with the disease, and placed in the Isolation Hospital.

Deaths and Disease.—There were 650 deaths in this city during the week ended February 24, an increase of 6 over the number for the previous week. The principal causes were: Typhoid fever, 47; heart disease, 50; pneumonia, 81, and

Bright's disease, 55. There were 415 new cases of typhoid fever during the week, an increase of 10 over the number of last week. The number of cases this week makes a total of 3,224 since January 1.

Reception to White.—A reception was given by the medical students of the University of Pennsylvania, February 12, to Dr. J. William White on his return from Europe. The opening address of welcome was made by O. F. Lamson, president of the senior class. Besides the reply Dr. White addresses were made by Vice-Provost Edgar F. Smith and Drs. J. Chalmers Da Costa, Ernest LaPlace, Alfred Stengel and Alfred C. Wood.

Hospital Officers Elected.—The following have been elected officers of the Samaritan Hospital Medical Society: President, Dr. James C. Attix; vice-presidents, Dr. Wendell Reber and Dr. Collier F. Martin; secretary and treasurer, Dr. Jesse O. Arnold; and executive committee, H. C. Groff, and Drs. Sherman F. Gilpin and Benjamin F. Devitt.——The following have been elected officers of the Woman's Hospital Medical Society: President, Dr. Elizabeth R. Bundy; vice-president, Dr. Belle A. Schisler; secretary, Dr. Annie L. Conner, and treasurer, Dr. Miriam M. Butt.

Joint Meetings.—The Kensington Branch of the Philadelphia County Medical Society has invited the educational leaders of that section to participate in a series of meetings just inaugurated intended to instruct the general public on urgent questions of hygiene, sanitation and medicine. School teachers, manufacturers, physicians and clergymen will here meet the general public of Kensington, and by following the symposia of able specialists, will be able to instruct pupils, congregations, employés and patients with the most recent data on the topics mentioned. The first symposium is on "Prevention of Tuberculosis in Industrial Section."

Wants One Board.—By unanimous vote, the Philadelphia County Medical Society adopted a resolution endorsing the bill now in the legislature providing for the abolition of the present system of three boards of examiners and the appointment by the governor of a single board of examiners consisting of nine members to grant licenses to practice medicine. Dr. Matthew Woods offered the resolution, following a talk on the provisions of the bill by Dr. Henry Beates, declaring that recent statements put out by opponents of the measure were absolute misrepresentations. Dr. Beates read a section of the bill to show that no one school of medicine was given any advantage in the constitution of the board of examiners.

TEXAS.

Hospital Notes.—At a meeting of the board of trustees of the King's Daughters' Hospital, Temple, January 10, it was decided to proceed with the construction of an addition of 10 rooms to the main building.——Brooke Smith, Brownswood, has given five acres of land for a hospital site, provided that a hospital be built at a cost of at least $10,000, and its maintenance be provided for.——The erection of a three-story and basement hospital building at Temple by the Gulf, Colorado & Santa Fé Railway Employés' Hospital Association isnow fully assured.——Arlington Heights Sanitarium, now under construction, is to be enlarged, so that its capacity will be 37 patients, instead of 15 patients as originally contemplated.

Personal.—Dr. James P. Tucker, Galveston, has been appointed quarantine officer at Galveston Pass, vice Dr. Edgar F. McClendon.——Dr. John H. Florence, Brownsville, has been appointed to succeed Dr. William P. Thompson as state quarantine officer at Sabine.——The following assistant physicians have been elected for the North Texas Hospital for Insane, Terrell: Drs. James R. Nichols, George F. Powell and Claude M. Poff, all of Terrell, and Dr. William J. Johnson, Cookeville.——Dr. Roy H. Gough, Hillsboro, has been appointed deputy district councilor.——Dr. Benjamin M. Worsham has been re-elected superintendent of the State Lunatic Asylum, Austin, and Drs. John W. Bradfield, Jacob T. Wilhite, G. Horace Gilbert and Margaret Holliday have been re-elected as assistant physicians.

Society Meetings.—At the annual meeting of the Ellis County Medical Association, held in Ennis, January 15, the following officers were elected: Dr. Joseph A. Tate, Ennis, president; Dr. F. A. Pierce, Ferris, vice-president; Dr. Walter P. McCall, Ennis, secretary-treasurer; Dr. James C. Loggins, Ennis, delegate to the state association; Dr. Warren T. West, Waxahachie, alternate, and Drs. Henry O. Stacey, Waxahachie; Oscie P. Sweatt, Waxahachie, and Charles P. Cook, Ennis, censors.——At a meeting of the Taylor County Medical Society, held in Abilene, January 16, Dr. Alonzo O. Scarborough, Snyder, was elected president; Dr. Franklin E. Haynes, Abilene, vice-president, and Dr. Shirley C. Gage, Abilene, secretary-treasurer.——At the annual meeting of the Nueces County Medical Association, held at Corpus Christi, January 18, the following officers were elected: President, Dr. Henry Redmond, Corpus Christi; vice-president, Dr. W. E. Carruth, Corpus Christi; secretary-treasurer, Dr. C. H. Yeager, and censors, Drs. William T. Harris, Mathis, and Harry Heany and S. T. Dodge, Corpus Christi, censors.——At the annual meeting of the Robertson County Medical Association, held in Hearne, the following officers were elected: President, Dr. Louis M. Bassett, Hearne, secretary; Dr. John H. Petty, Franklin, and delegates to the state association, Drs. Daniel Parker, Calvert; George M. Abney, Franklin, and Felix E. Collard, Wheelock.——The Red River County Medical Society met in Clarksville and elected Dr. Nowlin Watson, Clarksville, president; Dr. Robert Jones, Rosalie, vice-president, and Dr. James T. Hutchinson, Annona, secretary-treasuer.

VERMONT.

Objects to Use of Names.—At the quarterly meeting of the Lamoille County Medical Society, held in Morrisville, January 9, a resolution was adopted requesting the various papers throughout the state not to mention the names of physicians in connection with medical items regarding practice. A resolution was also adopted regulating fees for life insurance examinations.

WASHINGTON.

"Patent Medicines" Not to Be Sold Without Prescription.—Chief of Police Wappenstein, of Seattle, recently issued an order to druggists forbidding them to sell "patent medicines" containing opiates, without a prescription from a physician. The order is simply an enforcement of a city ordinance.

Society Elections.—At the annual meeting of the King County Medical Society, held at Seattle, the following officers were elected: President, Dr. H. M. Reed; vice-president, Dr. P. H. VonPoole; secretary, Dr. H. Eugene Allen, and Dr. J. C. Moore, treasurer. The annual reception and ball followed the election.——At a meeting of the Whitman County Medical Society, held at La Crosse, January 21, Dr. A. E. Stuht, Colfax, informed the society that the State Board of Medical Examiners for the state of Washington would pay $50 toward the prosecution of illegal practitioners of medicine in the state. The society adopted and confirmed a resolution that no member should make insurance examinations for any of the old-line insurance companies for a fee of less than $5. It was also recommended that all members adhere strictly to the resolutions adopted by the American Medical Association along these lines.——At the annual meeting of the Spokane County Medical Society January 3, the following officers were elected: President, Dr. Walter F. Morrison; vice-presidents, Drs. John G. Cunningham and Harold H. McCarthy; secretary, Dr. Carroll L. Smith; treasurer, Dr. Frank Rose, and censors, Drs. George K. McDowell, Wilbur W. MacKenzie and Peter D. McCornack, all of Spokane.——At the annual meeting of the Lincoln County Medical Society, held in Sprague February 6, the following officers were elected: Dr. Richard Connell, Odessa, president; Dr. J. E. Bittner, Sprague, vice-president; Dr. John M. Gunning, Harrington, secretary-treasurer, and Drs. E. C. Lanter, Wilbur, Rufus P. Moore, Davenport, and John M. Gunning, Harrington, censors.

WEST VIRGINIA.

Society Elections.—At the annual meeting of the Marion County Medical Society, held in Fairmont, the following officers were elected: Dr. Hal Hall, president; Dr. William C. Jamison, vice-president; Dr. James W. McDonald, secretary; Dr. William H. Sands, treasurer, all of Fairmont; Dr. James H. Riedy, Monongah, censor, and Drs. Henry R. Johnson and Claude L. Holland, Fairmont, delegates to the state association.——At a meeting of the Little Kanawha and Ohio Valley Medical Society, held in Charleston, January 5, the following officers were elected: President Dr. Thomas A. Harris, Parkersburg; vice-presidents, Drs. Robert L. Brown, Parkersburg; James B. Wilson, Pennsboro, and Wade H. Young, Ben's Run; secretary, Dr. O. Dustin Barker, Parkersburg; treasurer, Dr. C. W. Hudson, Parkersburg, and delegates to the state association, Drs. Lonzo O. Rose, Parkersburg, and James B. Wilson, Pennsboro.

WISCONSIN.

Licenses Revoked.—As the result of proceedings instituted by the State Board of Medical Examiners, licenses to practice medicine held by Drs. Edwin F. Kessler, Albert Preuss, Charles F. Peters and Hedwig Peters, graduates of an unrecognized medical school, were revoked.

Hospital Trustees Elect.—At the annual meeting of the trustees of the Emergency Hospital, Milwaukee, Dr. Frank B. Golley was elected president; Dr. Ralph Elmergreen, secretary; Dr. Louis Fuldner, house committee, and Drs. Arthur T. Holbrook and Gerhard A. Bading, committee to discharge patients.

Medical Society Elections.—At the annual meeting of the Milwaukee County Medical Society Dr. Lewis G. Nolte was elected president; Dr. William H. Washburn, vice-president; Dr. Joseph Kahn, treasurer, and Dr. Alfred W. Gray, secretary, all of Milwaukee.——At the annual meeting of the Sheboygan County Medical Society Dr. Otto B. Bock was elected president; Dr. Conrad T. Tasche, vice-president; Dr. William F. Zierath, secretary-treasurer; Dr. William H. Gunther, censor, and Dr. Arthur E. Ginter, delegate to the state society, all of Sheboygan.——At the annual meeting of the Milwaukee Medical Society Dr. Gustav J. Kaumheimer was elected president; Dr. George A. Carhart, secretary, and Dr. Robert C. Brown, treasurer.——The Fox River Valley Medical Association, at its annual meeting, held in Green Bay, elected Dr. Walter R. Hicks, Menominee, Mich., president; Drs. Richard C. Buchanan, Green Bay, and Daniel H. Gregory, West De Pere, vice-presidents, and Dr. Henry P. Rhode, Green Bay, secretary-treasurer.——The newly elected officers of the Ashland County Medical Society are as follows: Dr. Otto Braun, president; Dr. John V. Wenzel, vice-president, and Dr. John M. Dodd, secretary-treasurer, all of Ashland.——At a meeting of the Calumet County Medical Society, at Hilbert, Dr. George P. McKinney, Stockbridge, was elected president; Dr. Claude G. Greengo, Chilton, vice-president; Dr. L. Rock Sleyster, Kiel, secretary-treasurer (re-elected); Dr. Isaac N. McComb, Brillion, delegate to the state society, and Dr. Ernest L. Bolton, Chilton, alternate and censor. The secretary reports that every physician practicing medicine in the county is either a member or has applied for membership.

GENERAL.

Women Study Care of the Insane.—The International Guild for the Benefit of the Insane will hold meetings in Washington, March 30, in New York in August and in Newport in September. Further information may be obtained from the president, Dr. Bertha A. Rosenfeld, 257 East Seventy-first Street, New York City.

National Tuberculosis Association to Meet.—The third annual meeting of the National Association for the Study and Prevention of Tuberculosis will be held at the New Willard Hotel, Washington, D. C., May 6-8. The organization of the sections for the meeting is as follows:

SOCIOLOGIC SECTION: Mr. Paul Kennaday, New York, chairman; Mr. Christopher Easton, N. Y., secretary.
CLINICAL AND CLIMATOLOGIC SECTION: Dr. George Dock, Ann Arbor, chairman; Dr. Joseph Walsh, Philadelphia, secretary.
PATHOLOGIC AND BACTERIOLOGIC SECTION: Dr. F. F. Wesbrook, Minneapolis, chairman.
SURGICAL SECTION: Dr. W. S. Halsted, Baltimore, chairman; Dr. Hugh H. Young, Baltimore, secretary.
SECTION ON TUBERCULOSIS IN CHILDREN: Dr. T. M. Rotch, Boston, chairman.

Army Medical Corps Examinations.—Preliminary examinations for assistant surgeons in the Army will be held April 29 and July 29. The Surgeon-General, U. S. Army, Washington, D. C., will send full information. The applicant must be a citizen of the United States, between 22 and 30 years of age, a graduate of a reputable medical school, of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice. The examinations will be held concurrently throughout the country at points to be named later, where boards can be convened. Due consideration will be given to the localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible. Applications must be completed by April 1. There are at present twenty-five vacancies in the Medical Corps of the Army.

Charity Organizations and Tuberculosis.—The importance of tuberculosis in charity problems is indicated by the report of the Charity Organization Society of the City of New York, about 50 pages of which are occupied by the report of the committee on the prevention of tuberculosis. This report is divided into two sections, the first relating to educational work which has been carried on by the usual methods of exhibitions, lectures and the distributions of printed leaflets and cards. Of the so-called "Don't Cards" issued by the committee 243,000 were distributed during the year. In relief work the committee made the experiment of sending favorable cases of incipient tuberculosis from New York into the country for the summer. The expense was an average of $77.39 per patient, at a rate of $6.59 per week. The results were most satisfactory. The total cases improved or in which the disease was arrested amounted to 76 per cent. The country treatment of cases of tuberculosis referred from the city ought to be of special interest to country physicians and offers an opportunity to give great aid in the fight against tuberculosis.

Public Health Surgeons Wanted.—The Treasury Department announces that an examination will be held at 3 B Street SE., Washington, D. C., April 15, at 10 a. m., to examine candidates for assistant surgeonships in the U. S. Public Health and Marine-Hospital Service. Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and free from any ailment which would disqualify them for service in any climate. The written examination covers the various branches of medicine, surgery and hygiene. The oral examination covers preliminary education, history, literature and natural sciences. The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur. On appointment they are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago or San Francisco. After five years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon. Promotion to the grade of surgeon is made according to seniority, and after due examination as vacancies occur in that grade. Assistant surgeons receive $1,600, passed assistant surgeons $2,000, and surgeons $2,500 a year. When quarters are not provided, commutation at the rate of $30, $40 and $50 a month, according to grade, is allowed. The tenure of office is permanent. For further information address the Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C.

CANADA.

Hospital Notes.—A deputation from Selkirk, Man., recently waited on the premier of Manitoba to request a grant of $2,500 toward a hospital proposed to be erected in Selkirk, and to cost from $12,000 to $15,000.——Notre Dame Hospital, Montreal, has recently been the recipent of several handsome subscriptions. These total $239,000, of which Senator Forget of Montreal gave $200,000. The work of constructing a new hospital building has been commenced.——Dr. McInnis, M.P.P. for Brandon, Man., has secured $15,000 over and above grants from municipalities, for a tuberculosis sanatorium for the Province of Manitoba.——The Vancouver General Hospital treated more patients in December, 1906, than in any other previous month. The total of hospital days was 3,400, representing an average of more than 100 patients in residence every day of the month, and being double the number for the same month last year.

Trypanosomiasis in Canada.—The new professor of biology at Quebec A. Loir, who was assistant to Pasteur at one time, has recently published a communication on trypanosomiasis in Canada. Strict regulations have been enacted in Alberta against dourine, the trypanosome affection of horses, introduced some two years ago, and a laboratory for study of the disease has recently been installed there. Loir spent some time last fall at this laboratory, but neither he nor any of the others interested were able to discover the causal trypanosome in the horses, but Watson, one of the workers, succeeded in finding a trypanosome in the blood of wild rabbits in Alberta. In Loir's communication to the *Jour. de Méd et de Chir*, ii, 33, 1907, he states that this is the first time that a trypanosome has been found in a mammal in a cold country. Experiments under way seem to indicate that trypanosomes are able to retain their virulence a long time at very low temperatures. He discusses whether the trypanosomiasis of the rabbits has any connection with the dourine of the horses. The rabbits may eat the dejecta of the horses, which generally run wild in that region for most of the year. He adds that a special fatal disease among rabbits is known in Alberta, which seems to recur every six or seven years; possibly Watson's trypanosome may have something to do with it.

An Energetic Canadian Medical Society.—The report of the meeting of the French Medical Society at Joliette, Que., December 10, states that through the efforts of the society a notorious quack has been fined $100 and costs, with the alternative of 130 days in jail, while suits have been brought against two other quacks. The society has unanimously adopted the $5 fee for insurance examinations and for life insurance companies, with $2 for lodges and the like, and it was stated at the meeting that very few if any physicians will accept smaller fees in the districts of Wolfe, Sherbrooke, Beauce, Chicoutimi, Terrebonne, Portneuf, Lac St.-Jean, Three Rivers and Joliette. The Arthabaska Medical Society was criticised

for postponing the discussion of the fee question and regret expressed in regard to its discordant note in the general chorus of concerted action. Dr. Laurendeau remarked that he hoped the sister society would reconsider its action, not so much on account of the money question, but because it is a matter of principle and above all of dignity. Dr. Lippe related a talk with an insurance agent and stated that he told him that all examinations were worth $5 but that for the mutual benefit societies, lodges, etc., the fees were reduced as a matter of charity. A passage from a Three Rivers daily paper was read stating the arrival of a Dr. E. Lebel of Quebec who had come to the place at the request of the Canada Life Insurance Company to make examinations as the local physicians refused to make them at the new $3 rate. Dr. Laurendeau remarked that if the Quebec physician goes to Three Rivers again for this purpose, scorning medical ethics, the Quebec Medical Society will be asked to make an effort to educate the physicians of that region in the principles of solidarity and the benefits of concerted action. Hitherto the Quebec Medical Society has paid no attention to the insurance fee question, but, he added, when one of its members goes elsewhere to carry out his ideas in defiance of the prevailing usage of the place, it is time to call attention to the fact. A resolution was adopted providing that a circular letter be sent to all the physicians of the Joliette district, asking each to give his views on the fee question. A similar letter has been sent out by the medical society at Three Rivers. The Joliette society further took up the matter of "patent medicines," and a committee was appointed to confer with the member of parliament from the district and to inform him in regard to the views of the society on the question of having the formulas of "patent medicines" printed on the circular accompanying the article. Copies of the resolution urging the passage of the bill to this effect now in the legislature are to be sent to all the medical societies of the province. The *Journal de Med. et de Chir.*, for January 12, contains the detailed report of the secretary, A. Laurendeau.

FOREIGN.

Italian Congress of Ophthalmology.—The next congress will meet at Parma in October. Further particulars can be learned from Professor Gallenga of Parma.

Polish Medical Congress.—The tenth Congress of Polish Physicians and Scientists will be held at Lemberg in Austrian Poland, July 22-25, 1907. Dr. F. E. Fronczak, 806 Filmore Avenue, Buffalo, N. Y., is the representative in this country.

Foreign Members of French Surgical Society.—The Société de Chirurgie has elected Dudley Tait of San Francisco, J. Israel of Berlin, Psaltoff of Smyrna, and Giordano of Venice, foreign correspondents, while Mayo Robson of London was elected foreign associate.

Women Medical Students in Switzerland.—Switzerland has 5 universities, with a total of 2,102 medical students this year. Of this number, 1,171 are women, but only 31 are natives of the country. These figures show an increase over last year, when the total number of students was 1,799, including 993 women.

Leprosy in Africa.—The *British Medical Journal* states that leprosy is increasing in British Guiana, though segregation is enforced as much as possible. A new ordinance provides that wandering lepers and those who can not be properly cared for and isolated in their own homes shall be sent to the leper hospital, which is also capable of being used as a prison or lunatic asylum should any criminal or insane person be found suffering from the disease. All cases of leprosy must be reported by physicians, and various trades are forbidden to lepers.

Germany Discards Greek and Latin as Preliminary for Medical Course.—The authorities in Germany have announced that graduates from the high schools which do not include Latin or Greek in the curricula can matriculate in the medical department of the universities without passing any examination in Latin or Greek. At their first medical examination, however, they will have to pass an examination in Latin showing sufficient knowledge of the language to understand scientific terms. The law and theology departments still retain the classical standard as preliminary to matriculation.

Death of Organizer of the German Imperial Office for Compulsory Insurance of Wage-Earners.—The death of Dr. T. Bödiker is announced from Berlin, the organizer and former president of the state department which introduced and manages the insurance of workmen against illness, accident, old age and permanent earning incapacity. This stupendous scheme is ascribed to Bismarck, who devised it to side-track socialist agitation and placed the working out of the scheme in the hands of Bödiker. He accomplished the task with rare skill, having absolutely no precedents to go by. Honorary degrees of medicine, law and philosophy were conferred on him by various universities, and our exchanges comment on his work as entitling him to lasting honor, especially in medical circles. He died February 4, aged 63.

Death from Drinking a Solution of Potassium Chlorate.—The Swiss courts recently condemned a military surgeon to a month's imprisonment on account of the death of a soldier in his charge from the consequences of drinking a solution of potassium chlorate which had been given him for a gargle. Evidence was presented that the physician had expressly stated to the patient and to the under sanitary officer attending him that the solution was for a gargle, but the sanitary officer alleged that he did not know what a "gargle" meant, and had allowed the soldier to drink the fluid. A military court of appeals took the matter up and the sentence was reversed and the physician honorably discharged. The *Allg. med. Ct.-Ztg.*, in commenting on the affair remarks that it will certainly banish potassium chlorate from the medicine chest of the Swiss army medical officers to make way for some gargle that will not prove deadly if swallowed.

Accidents of Serotherapy.—Under this heading Novaes discusses in the *Tribuna Medica* of Rio de Janeiro for Dec. 1, 1906, the recent death of Dr. F. Fajardo, chief of the Bacteriologic Institute at Rio, president of the Academia Nacional de Medicina, who died shortly after a preventive injection of antiplague serum, as already mentioned. He explained his symptoms and collapse with the simple statement: "Accidents of serotherapy," and added: "Give me an injection of caffein, keep up artificial respiration and rub my body." A few minutes later he added: "I am going to die. It is useless." Novaes reviews the rare similar cases of accidents from serotherapy on record, remarking that "in the prevailing bacteriolatry only series of successful cases are published," adding that Fajardo's epitaph might be Seneca's saying: "Man does not die; he kills himself." Fajardo's works on tropical medicine were numerous and well known, both in Europe and America.

Unique Memorial to Hanot.—A special issue of the *Archives Gén. de Médecine*, January, 1907, is devoted to the life-work of the Paris physician, V. Hanot, who died ten years ago, and who, for a number of years was editor of the *Archives*. After a brief biographical sketch, the complete list of his works is published, each one, with a few exceptions, followed by a summary of the principal points in the work. The list, with the summaries, thus fills over 90 pages, as 207 original works and monographs are reviewed, with 17 critical reviews or compilations of lectures, and 29 published clinical lectures with 15 monographs published by his pupils under his direction. Hanot's name is principally connected with affections of the liver—he is said to have "renovated, recast in a new mold and recreated the pathology of the liver"—but his imprint was left on many other branches of medicine. A bronze portrait tablet was unveiled at the Hôpital Saint-Antoine last fall, as was mentioned in these columns at the time.

Two Festschrifts for Olof Hammarsten of Upsala.—The pupils and friends of Professor Hammarsten have presented him with a volume of 670 pages as a souvenir of his sixty-fifth birthday, August 21. It contains 22 articles from the pen of various Danish, Swedish, Norwegian and Finnish physicians, written in German, French or English. Santesson relates research on the local action of cocain and of stovain on the peripheral nerve trunks; Hedin on the influence of acids and alkalies on the autolysis of organs; Hasselbach on the action of light on the binding of oxygen in the blood; O. Folin of Waverly, Mass., describes the chemistry and biochemistry of kreatin, and I. Bang of Lund relates the excellent results obtained with centrifugation in quantitative analysis. The Physiologic Institute at Helsingfors has also issued a *Festschrift* in honor of Hammarsten, which appears as volume xviii of the *Archiv f. Physiologie*. Hammarsten has been professor of medical and physiologic chemistry at Upsala since 1869, and has published numerous articles and text-books on his specialty.

General Conference of the Practitioners of France.—About the middle of April a congress is to be held at Paris for discussion of reform in the present modes of medical education in France and also to promote the free choice of the physician by policy holders in insurance societies, etc., and to devise ways and means for postgraduate instruction. Delegates from more than a hundred different scientific and professional medical associations and private individuals are to confer at this *Assemblée nationale des médecins de France*. Huchard, Lereboullet and Reymond belong to the committee on organization, as also the presidents of the various medical syndicates and

federations, and other prominent physicians. The French people are very conservative in certain lines, and especially in the matter of medical instruction. The universities and their medical departments are still managed in great part as when first founded, not conforming to the progress of science and general education. One of the tasks proposed by the congress is to compile a list of the true practitioners, outside of the bureaucracy of the universities, and to insist that proposed reforms should be submitted to a representative body chosen among them rather than invariably from the reactionary university circles as in the past. The program of the congress states that reform is urgently needed in the existing abstract, theoretical, encyclopedic methods of teaching medicine, apart from life and from reality. It adds, "Every one knows that none of our masters has received an education comparable to that of his pupils."

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Feb. 9, 1907.

Research in Tropical Medicine.

The great progress in tropical medicine made by Great Britain in recent years, though in the main due to private enterprise, has lately received considerable assistance from the government. In July, 1904, the secretary of state for the colonies appointed an advisory committee for the tropical diseases research fund, to which the imperial government, the government of India, and many colonial governments, and the Rhodes trustees contribute. The report of this committee has just been issued. The revenue for 1906 was $15,000, which consisted of contributions from colonial governments, $9,000; from the imperial government and the government of India, $2,500 each; from the Rhodes trustees, $1,000. The London School of Tropical Medicine received $5,000, which is to be devoted to the salaries of a combined teacher and investigator of protozoölogy, and a combined teacher and investigator of helminthology, and to the provision of laboratories. The Liverpool School of Tropical Medicine received $2,500 for the salaries of a lecturer in economic entomology and parasitology and a lecturer in tropical medicine, both lecturers being required to devote their spare time to research. In April, 1906, the colonial secretary sent a circular letter to the governors of the colonies insisting on the necessity for scientific research by specially trained officers in tropical colonies. A step has already been taken in this direction by the establishment of a research institute in the Federated Malay States, and by the creation of bacteriologic posts in Hong Kong, the Straits Settlements, Ceylon, Mauritius, and British Guiana. But the secretary considers these appointments insignificant in number compared to the work to be done. As a difficulty has been experienced in filling them, he suggests that in a colony which has an adequate medical staff and is in a position to vote funds for scientific purposes, a sum might be devoted for detailing one or more of its medical officers to study the latest phases of modern scientific research in the best known centers.

Tetanus Due to Anti-Plague Inoculations in the Punjab in 1902.

The investigations into this catastrophe have only just been published and the report is a most elaborate one. The accident was confined to a particular bottle and to the use of a particular syringe. The syringe used on the 19 persons was rinsed out with carbolic lotion after the inculpated bottle had been emptied. Afterwards other people were inoculated without ill results from other bottles. Experiments showed that a syringe into which a tetanus culture, grown in a bottle of prophylactic even for a few days, has been drawn, becomes grossly contaminated. It follows that the prophylactic in the incriminated bottle could not have contained a developed tetanus culture, as the persons injected showed only the symptoms of an ordinary average case, not an acute or virulent one. The bottle was recovered and examined fifteen days after the accident, and instead of the rich toxic culture referred to above, contained only a poor culture of reduced toxicity. The contamination appears to have been due to opening the bottle with a forceps that had been dropped on the ground and which was not sterilized before being applied to the bottle. No pains were spared in making the investigation, as not only was a commission appointed in India, but it was also referred to the Lister Institute of London.

Milk Supply of Great Britain.

The cities and towns of Great Britain are becoming more and more alive to the fact that their milk supply is susceptible of great improvement in many particulars. Transportation, distribution, and the character of many of the stores at which milk is retailed, are alike said to be inadequate and defective. Many municipalities have established milk depots at which poor persons can procure sterilized milk for the nourishment of young children and infants. Such depots are stated to have done good work, and to have been the means of checking, to some extent, the appalling infant mortality which prevails in almost all large British towns. London is probably the worst served city of Great Britain, so far as the milk supply is concerned. There is also a far smaller number of municipal depots in proportion to its population, than are present in other large British cities. As the law now stands, it is not legal to establish depots in Great Britain for the supply of sterilized milk for infants. It has been announced recently that a bill is to be introduced into parliament to legalize their establishment. This rumor has aroused the medical profession, who voiced the general opinion on the subject through Sir Thomas Barlow. This physician said that sterilization is only a second best process; once the milk is sterilized it is no longer possible to testify as to the goodness of the source of supply. Children fed on sterilized milk develop scurvy and rickets. Experience shows that if fresh milk is cooled immediately after it is drawn, and put into vessels properly sterilized, and kept cool in transit, the problem is solved. It is argued that a municipal depot should not be an institution for the distribution of sterilized milk, but one for the distribution of clean fresh milk. In Glasgow, the farmers supplying the milk depot are required to comply with certain stringent sanitary regulations. It may be stated with emphasis that most cities of America are far in advance of British cities in regard to the milk supply. The medical profession and general public of Great Britain are commencing to recognize this fact, and it will not be long before steps are taken to remedy the existing conditions. The *Lancet* is taking up the question, and articles published January 19 and 26 on the manner in which milk is retailed in small general provision stores in London, have attracted considerable attention.

Death of a Signalman in His Box. A Question of Professional Secrecy.

A dramatic interruption of the service of the Lancashire and Yorkshire Railway occurred near Blackburn. Passenger trains going both ways found themselves held up by danger signals from a certain signal box, while the neighboring boxes reported the track clear. An inspector on going to the box in question found the signalman on the floor, leaning against his levers, dead. The entries in his book showed that he had been doing his duty twenty minutes before he collapsed. He is said to have suffered from heart disease, a question which will no doubt be settled at the inquest. Curiously a short time before this fatality, the following point was raised in the *British Medical Journal*, and its bearing on the case reported above is not lost sight of by the lay press. A physician was attending a railway signalman who suffered from asthma. The attacks come on suddenly and are so severe that the patient falls on the ground struggling for breath. He has not yet had an attack in his signal box, where he is on duty alone, sometimes for many hours. He declines to inform the railway company of his illness, thinking this would lead to his discharge. The physician is afraid that if he reports the case to the railway company an action for damages will be brought against him by the patient. On the other hand, he fears that if he does not break the seal of professional secrecy there will probably be a railroad accident. Commenting on the case, the *British Medical Journal* says that the circumstances, extreme though they be, can not be held to justify a breach of professional secrecy.

The Decline of Homeopathy.

Dr. G. Burford, in the *Monthly Homeopathic Review*, takes a despondent view of homeopathy in Great Britain. Eight homeopathic pharmacies have closed their doors within the last few years in London, and in the provinces a similar condition exists. Ten years ago there were 205 physicians in the Homeopathic Society; to-day there are only 190. "In the earlier days of homeopathy converts were not infrequent among professional men in good practice. Of late years this method of accession to the homeopathic ranks has fallen into desuetude." The reason given by Dr. Burford is that "the introduction of antiseptic surgery" has saved the "allopathic" situation. Recognizing the "importance of the crisis" the British Homeopathic Association has drawn up a plan of propaganda. All the homeopathic bodies in the country are to be co-ordinated and the machinery of education created. A school of homeopathy is to be founded and professors are to be appointed. However energetically this campaign may be carried on it is not likely to meet with any success. The modern development of scientific medicine in Great Britain is fatal to homeopathy.

Increase of Drinking Among Women in Great Britain.

Much alarm has been expressed of late in regard to the great increase of drinking among women in Great Britain. Dr. Brathwaite, inspector under the British Inebriates Act, has recently issued his annual report and no part of it is more alarming than that which refers to women inebriates. The report states that women under detention for drinking in British reformatories are far more numerous than male delinquents, outnumbering the men in the proportion of nearly eight to one. It is also stated in the report of the registrar-general of Great Britain, that while in the years 1880-1900 the death rate from intemperance taking the ratio per million of the population, increased 87 per cent. among men, among women it increased 180 per cent.

Sleeping Sickness in Uganda.

The government of Uganda is making vigorous efforts to deal with the difficult and alarming problem of sleeping sickness. All persons suffering from it are being removed from the fly-infested districts along the lake shore and placed in special camps or settlements inland under medical care. The disease seems to be decreasing but the mortality is still very great. It is proposed to create ten settlements, each providing accommodation for 1,000 sufferers and their families. It is estimated that the expense will amount to $150,000. Even persons who do not so far show signs of infection are being removed from the lake shore to inland districts free from tsetse flies. All vegetation capable of harboring the tsetse fly is being removed and the measures already taken are so effectual that a single fly can not now be found in Entebbe.

Five Million Dollars for London Poor.

Mr. Whitely, the London shopkeeper who recently died under tragic circumstances, has bequeathed a large portion of his estate for charitable purposes. Nine London hospitals have benefited by substantial legacies, and the sum of $5,000,000 has been left to found, provide and maintain homes for the aged poor.

VIENNA LETTER.

(From Our Regular Correspondent.)

VIENNA, Jan. 30, 1907.

The Crusade Against Spitting.

The spitting nuisance has assumed such proportions that the authorities have been forced to comply with the long expressed wishes of the profession and renew the old regulations against public spitting. The railway companies, tramcar and bus companies and the proprietors of all public conveyances have received strict orders from the health department of the interior to place in all compartments and carriages notices forbidding spitting on the floor. In certain of the health resorts, especially the scattered climatic resorts, the police have strict orders to arrest anyone found spitting on the floor or on the ground. In the hospitals all patients are taught to avoid spitting, and are urged to exert their influence among their friends against the custom. The Vienna Society for the Care of the Phthisical (Tuberkulosefürsorge) is most active in this respect.

Free Meals for School Children.

A committee has been formed having for its object the distribution of free meals to school children. As the funds are at present small, the number of recipients is naturally limited. Those parents who can afford to pay a small sum for the daily feeding of their children will be asked to do so, and thus enable the other children to be fed gratuitously. As the food supplied by the society is much superior in quality to that obtained otherwise by the children of the poor, it is expected that many parents will avail themselves of this opportunity of securing good meals for their children.

Successful Transplantation of the Cornea.

Dr. Zirm of Olmütz reports what he thinks is probably the first successful implantation of a part of the cornea. By accident, a man had both his eyes made useless, the cornea becoming opaque, whitish gray, and consisting only of scar tissue. Dr. Zirm happened to come across a boy of 11 years of age at the same time, whose eye had to be enucleated on account of injury from an iron splinter. Part of the cornea from the boy's eye was transplanted to the eyes of the man. After ten days the right eye became painful and the transplanted piece had to be removed. In the left eye, however, the transplantation was a complete success. The new cornea, as it appears fourteen months after the operation, is absolutely clear and transparent, and enables the man to do his work.

Pharmacology

NEW AND NON-OFFICIAL REMEDIES.

The Preliminary List of Approved Articles Now Ready for Distribution.

To assist those who desire to co-operate with the Council on Pharmacy and Chemistry in any way, and who thus need to know what preparations have been approved, at least tentatively, the list of the names of the articles, brought up to date, appears in the advertising pages of the first issue of THE JOURNAL of each month. On advertising page 24 of this issue will be found such a list. To facilitate criticism and correction of errors a reprint has been issued containing the names and descriptions of all the preparations thus far provisionally approved. The brochure names and describes about 230 articles, making a pamphlet of 112 pages. A copy will be sent to any one on receipt of 6 cents in stamps.

PHARMACOPEIA CHANGES.

Corrections and Modifications Announced in Drug Standards of the U. S. Pharmacopeia.

We are informed by the Committee of Revision that on account of the passage of the Food and Drugs Act and on account of information which has been furnished to the Committee of Revision, certain changes, listed below, have been made in drug standards in the U. S. Pharmacopeia, eighth revision. These changes, which are comparatively slight, will not materially affect the doses of the fluidextracts and tinctures of the drugs. It will, however, enable manufacturing pharmacists and others to make the preparations to comply with the requirements of the Pharmacopeia, and they can now be held accountable under the law if these standards are not upheld. The changes are:

BELLADONNA LEAF *now* 0.3 per cent. mydriatic alkaloids.
BELLADONNA ROOT *now* 0.45 per cent. mydriatic alkaloids.
COLCHICUM SEED *now* 0.45 per cent. of colchicine.
IPECAC *now* 1.75 per cent. of ipecac alkaloids.
STRAMONIUM *now* 0.25 per cent. of mydriatic alkaloids.
FLUIDEXTRACT OF BELLADONNA ROOT *now* 0.4 Gm. alkaloids in 100 Cc.
TINCTURE OF BELLADONNA LEAF *now* 0.3 Gm. alkaloids in 100 Cc.
FLUIDEXTRACT OF COLCHICUM SEED *now* 0.4 Gm. alkaloid in 100 Cc.
TINCTURE OF COLCHICUM SEED *now* 0.04 Gm. alkaloid in 100 Cc.
FLUIDEXTRACT OF IPECAC *now* 1.5 Gm. alkaloids in 100 Cc.
FLUIDEXTRACT OF STRAMONIUM *now* 0.25 Gm. alkaloids in 100 Cc.
EXTRACT OF STRAMONIUM *now* 1.0 per cent. alkaloids.
TINCTURE OF STRAMONIUM now 0.025 Gm. alkaloids in 100 Cc.
JALAP ROOT *now* 7 per cent. of total resin.
Under the article PETROLATUM, page 336, U. S. P., last paragraph, the sulphuric acid test has been dropped.

Orangeine and Its Methods of Advertising.

The Food and Drugs Act has resulted in peculiar developments in regard to certain "patent" and proprietary medicines, some of which would be amusing if it were not for the tragedy side. Orangeine is a widely advertised "patent medicine" of the acetanilid order. As will be remembered, it was one of the nostrums shown up in the official report of the Council on Pharmacy and Chemistry, published in THE JOURNAL A. M. A., June 3, 1905, the others being Sal Codeia (Bell), Antikamnia, Ammonol, Phenalgin, and Koehler's Headache Powders. We have already shown how the owners of one of these frauds have changed the composition of their product, substituting phenacetin rather than acknowledge that they had been using acetanilid. Incidentally, it is interesting to notice that the formula of orangeine, now made open to the public by the Federal law, agrees almost exactly with the report published by the Council on Pharmacy and Chemistry. The published formula is 2.4 grains of acetanilid and a grain of bicarbonate of soda in a five-grain powder. This would be approximately 46 and 20 per cent., respectively. The Council's analyses showed 43 and 18 per cent., although, as stated at the time, the percentage of acetanilid published was the lowest found by any of the chemists engaged in making the analyses.

But that is another story. What we want to call attention to at this time is the brazen effrontery with which the orange-

ine people are using in their advertisements a sentence from a letter from Dr. Wiley. Here is the sentence:

"We are well conversant with the fact that Acetanilid, when properly used, is a most valuable remedy, but its indiscriminate use in the hands of the laity undoubtedly does great harm in many cases."

Those who know Dr. Wiley know that he looks on these acetanilid mixtures as among the most dangerous "patent medicines" on the market, and on orangeine as a typical example of the dangerous ones. Dr. Wiley appreciates, and so do others who know anything about the subject, that the rest of the stuff in the mixture called orangeine—and, for that matter, in all the acetanilid mixtures, whether "patent medicines" or those exploited as "ethical proprietaries"—is both harmless and useless. It is simply a blind to humbug and mislead the public.

Death from Koehler's Headache Powders.—Dr. P. Loewenthal, New York City, reports the death of a man in an hour and a half after taking two of Koehler's headache powders. The coroner's jury returned the following verdict:

The said James Tobias came to his death on the 2d day of September, 1906, at 1187 Lexington avenue, by acetanilid poisoning, administered at the time and place aforesaid in Koehler's headache powders, purchased at drug store of P. Jaffe, 1133 Lexington ave.

Chemist C. P. O'Conner made an analysis of a sample powder and reported it to be "made up of acetanilid."

The analysis of this nostrum, made under the direction of the Council on Pharmacy and Chemistry, was published in THE JOURNAL, June 3, 1905, page 1791. According to this analysis, Koehler's headache powders contain approximately: Acetanilid 76 per cent., and caffein 22 per cent.

Death from Chamberlain's Colic, Cholera and Diarrhea Remedy.

Dr. W. C. Fulkerson, Marshall, Okla., reports a death from Chamberlain's Colic, Cholera and Diarrhea Remedy self-administered. He states that according to the formula, which is now published under the Food and Drugs Act, the remedy contains 6 grains of opium to the ounce.

"An Impudent Instruction."

It is a pleasure to quote the following, from the *Humboldt Times* (Eureka, Cal.), as another evidence that the "patent medicine" men have not their grip on all the newspapers of the country:

"Since the time of the legislature's convening the manufacturers of proprietary medicines have flooded the mails addressed to the newspapers of California with appeals to 'use their influence' in connection with certain proposed legislation, affecting drugs, under consideration at Sacramento. It is to be presumed that prepared editorials supporting the policies favored by the 'patent medicine' companies have been forwarded to some newspapers; for certain journals have recently appeared with editorials exactly in line with the arguments and appeals advanced by these interests.

"The *Times* has not been altogether exempt from the approaches of these medicine makers, who evidently consider that their advertising patronage entitles them to dictate newspaper policy. Most of the communications received have been simple requests, and have been ignored; but one medicine company has presumed too far, as the text following will show.

"The *Times* does not know the merits of the arguments advanced by the medicine manufacturers, but it does know that the patronage of the medicine companies does not and will not influence the paper's policy, or in any manner affect the private or public actions of its management.

"In this connection, the *Times* takes the liberty of setting forth a telegram which it received Wednesday, and the reply it forwarded, the same being as follows:

LETTER BY THE "TIMES."

EUREKA, CAL., Feb. 13, 1907.

Miles Medicine Co., Elkhart, Ind.:

Gentlemen:—I am this day in receipt of a telegram from you, reading as follows:

> "Senate Bill Thirty, similar to National Law, satisfactory House Bill 531 has been amended by adding digitalis, nitroglycerin or other poisonous drug. These bills have both passed and will be harmonized in conference. Use your influence with representatives and senator to support Senate Bill Thirty, uniform with National Law."

In reply to the above telegram, which I consider impudent and insolent in the extreme, I will state that it is not the intention of the *Humboldt Times* or its management to have anything to do with attempts to influence the action of Humboldt County's legislators regarding "patent medicine" legislation. The *Times* believes that the Humboldt legislators will do, in this matter, what to them appears advisable and proper, in the public interest.

Several patent medicine companies have requested this office to "exert its influence" in connection with medical legislation. I have not deemed it necessary to reply to the same; but your arrogant command calls for a reply, and I deem this a proper and excellent time to advise you that under its present management the *Times* will frame its own policy and dictate its own action relative to public affairs, in accordance with what it believes to be consonant with the public welfare.

If this reply seems to you an improper one; if you are under the mistaken impression that your advertising patronage, for which you are getting large returns, gives you the privilege of issuing orders to the management of this paper, then you are respectfully advised to terminate your contract and withdraw your business from the *Times*. This paper is anxious to carry a large volume of advertising, but only on a strict, legitimate, business basis. I might also notify you at this time that the *Times* intends to give its preference to the advertising business of Humboldt and Eureka business men.

I anticipate that you will be considerate enough to offer an apology for the offense you have given, and I expect you will state in explanation that it is the habit of many editors and managers to take such orders as you unsuccessfully have attempted to issue to me. I regretfully confess that perhaps the average newspapers are weak enough to encourage you in your bad habit; but you will please consider that the *Times* is conducted on a higher plane of journalism. Very respectfully,

WILL H. FISCHER.
Manager *Humboldt Times*."

Correspondence

"Starch Sugar as a Food Adulterant."

CHICAGO, Feb. 19, 1907.

To the Editor:—In THE JOURNAL, January 26, appeared an article by Prof. Henry Leffmann, entitled "Starch Sugar (Glucose and Grape Sugar) as a Food Adulterant." The statements contained therein are in many instances misleading and so out of accord with the facts as to call for a correction of at least the principal features. Sulphuric acid is not employed in the manufacture of American glucose and grape sugar. It is surprising that Professor Leffmann is not better informed on this point, particularly as information can easily be obtained. This misstatement affords him the means of casting reflection on the wholesomeness of starch sugar and glucose, and makes it possible for him to cite the case of an extensive poisoning in England a few years ago by arsenical glucose, where the contamination by arsenic was due solely to the sulphuric acid employed in converting the starch material. At the times of this arsenic poisoning, Dr. Wiley conducted a thorough investigation and proved that American glucose could in no way be connected with this incident. This was corroborated by Professor Chandler of Columbia College in his presidential address before the Society of Chemical Industry, at its London meeting. Leffmann states that, "apart from some limited special applications, for which it is alone suitable, commercial glucose and grape sugar are almost entirely employed as adulterants and substitutes for natural carbohydrates." As regards the last part of this statement, it will not be disputed that a substitute may have the same food value as the material which it replaces. This applies particularly to grape sugar and cane sugar, as the caloric units of both are practically the same.

Let us now consider for a moment the principal uses to which glucose is put. The largest consumption of glucose or "corn syrup" is found in table syrups, glucose in this case being blended with cane syrup, refiners' syrup, molasses or sorghum. Such syrups are sold under their correct names, to-wit: "Corn syrup with cane flavor," "Corn syrup and molasses," "Corn syrup and sorghum," etc. It can not be said, therefore, that in this instance glucose is employed as an adulterant, nor is it employed as "a substitute for natural carbohydrates," for the sales of corn syrups outnumber those of cane syrups almost tenfold. Glucose is also largely employed in candies. When the United States committee on food standards prepared the standards for candies, special attention was given to glucose, and in the definition for candy, as finally adopted, the use of any saccharine substance was sanctioned. Another large market for glucose is found in the preserve business, the glucose in this case being employed not to lower the cost of the product, but to improve its quality. As to the use of grape sugar in fermented products, wines produced in Missouri, Ohio, and the eastern states require the addition of some kind of sugar, because the grapes, on account of the climatic conditions, do not contain

as much saccharine matter as in other more favored localities, as, for instance, California. The preference is given to grape sugar over cane sugar, not because of the difference in price, but because of its superior merits. As to grape sugar in beer, it is acknowledged that ale beers with keeping qualities can not be produced without the use of sugar, and again the preference is given to grape sugar.

Leffmann directs his principal criticism towards the report rendered in 1884 by a committee appointed by the National Academy of Sciences for the purpose of making an investigation of the purity and wholesomeness of glucose. This committee consisted of Professors Barker of the University of Pennsylvania, Brewer of Yale, Chandler of Columbia College, Gibbs of Harvard, and Remsen of Johns-Hopkins, and it is reported that "starch sugar thus made and sent into commerce is of exceptional purity and uniformity of composition, and contains no injurious substances," and "though having at best only about two-thirds the sweetening power of cane sugar, yet starch sugar is in no way inferior to cane sugar in healthfulness, there being no evidence before the committee that maize starch sugar, either in its normal condition or fermented, has any deleterious effect on the system, even when taken in large quantities." Leffmann finds fault with these investigations because they "were entirely insufficient according to modern standards of physiologic inquiry." He mitigates this rather severe criticism by stating: "This does not reflect on the ability of the members of the committee. They proceeded according to the light available at that time." In answer thereto we may state that in 1894, ten years after the original investigation had been conducted, these same scientists went on record as entertaining the same views as in 1884, and that, if anything, their belief in glucose had been strengthened.

Of expressions in favor of glucose of more recent date we may quote the following: Dr. William Murrell of England, in the *Medical Press and Circular*, May 1, 1901: "Commercial glucose is not only a food but a most excellent food." Dr. Wiley stated at the times his testimony was taken before Senator Mason, in connection with the establishment of a national food law that "the series of foods, known as glucose or grape sugar, when properly made, are valuable food materials and not injurious." And again Dr. Wiley at a meeting of the Philadelphia Retail Grocers' Association, Feb. 15, 1906: "I am a friend of glucose and of every healthful food product."

To substantiate his criticism against glucose Dr. Leffmann cites the "revelations brought about by the prosecutions recently undertaken by Dr. Warren, dairy and food commissioner of Pennsylvania," according to which glucose was contaminated in many cases with appreciable amounts of sulphuric acid. This statement is wholly erroneous. The investigations of Dr. Warren in Philadelphia showed a large amount of cheap candies to contain sulphites. The presence of sulphites was attributed to the glucose employed in the preparation of these candies, although it was generally known that it was a common practice among some confectioners to use sulphite preparations in the manufacture of their candies, and this accounted for the relatively large amount of sulphites found. It has never been denied that the brand of glucose, known as "Confectioners' glucose," which was sold to confectioners only, contained small amounts of sulphites, but these were considered unobjectionable because the sulphurous acid was supposed to be given off entirely at the high temperatures employed in cooking candies. The very moment the issue was raised the management of the Corn Products Refining company discontinued the manufacture of the sulphite-containing brand, so that every pound of glucose or grape sugar sold since for food purposes is absolutely free from this ingredient. It is quite pertinent to state that there is not one case on record where the purity or wholesomeness of any of our corn syrups put up for table use was questioned, although millions of cans are sold every year throughout the country.

It remains to reply to the allegation that the company had consented to pay all the numerous fines in Pennsylvania. This statement is absolutely without foundation, the facts being that when the matter was presented to Attorney General Carson and Special Attorney McGibney, who had been employed by Dr. Warren, for the purpose of prosecuting these cases, they both advised Commissioner Warren that he should dismiss the 250 suits pending, which was done, as the records will show.

We regret that the space allotted us does not permit of doing the subject full justice, yet we believe that from the foregoing it is evident that Professor Leffmann's statements do not appear entitled to serious consideration, as most of the data submitted by him are erroneous. He has failed to submit any proof, scientific or otherwise, which would justify his demand that the use of glucose and grape sugar in foods be restricted. On the other hand, we believe we have shown that the report made by the committee in 1884 is substantiated in every respect by later developments and investigations.

CORN PRODUCTS REFINING COMPANY.
(By T. B. Wagner, Ph. D.)

The above letter was submitted to Dr. Leffmann, who replies as follows:

PHILADELPHIA, Feb. 23, 1907.

To the Editor:—(*a*) All the literature that I have consulted mentions sulphuric acid as one of the principal agents in the making of glucose. I am aware that other acids have been used. The latest American work I have is Leach's "Food Inspection and Analysis." This states that "usually sulphuric acid" is employed. It is important to note that Dr. Wagner does not say what acid is used. Why this omission? His assertion that chemists can easily find out what methods are used in manufacturing operations is not correct. Chemists are usually denied admission, unless they are "orthodox" in their views of the sanitary relations of the products. If hydrochloric, oxalic or sulphurous acid is used, the fundamental danger is not removed. Each of these is a laboratory product and liable to impurities that do not occur in natural products. Let Dr. Wagner tell us what is used and then we can judge of the degree of danger.

(*b*) The statement that American glucose does not involve danger from arsenical poisoning may be admitted, I think, without affecting the point I wished to make. I referred to it to show that great harm had been done. In view of the disaster it is likely that all glucose is, and will be for a long time, free from arsenic, but the discovery was not made by the chemists of the glucose-makers, and many human beings were sacrificed to the "official" confidence and approval of glucose as a substitute for malt.

(*c*) I do not dispute that "a substitute may have the same food value as the material which it replaces," but before the makers and users of glucose can take advantage of this dictum they must show the fact. The comparison of calories means nothing. Dextrin and cellulose have the same percentage composition as starch, but they do not have the same value as food for human beings. Mushrooms and meat extracts contain considerable nitrogen, but it is now known that neither can be ranked as equal to a standard proteid diet, having the same nitrogen ratio. A few weeks ago THE JOURNAL pointed out that a preparation of agar-agar, widely advertised as a nutritious food, is about as nourishing as so much paper-pulp, yet the calories of agar-agar are probably nearly those of starch.

(*d*) Dr. Wagner admits my contention that starch-sugar is principally employed as a substitute and adulterant of the natural carbohydrates. He says: "The largest consumption of glucose or corn syrup is found in table syrups." "Such syrups are sold under their correct names." Here is a monstrous misstatement. Dr. Wagner gives some so-called "correct names." Every one of them is deceptive; every one has been devised with the sole object of deceiving. The term glucose has been largely discredited; the community is suspicious of it; the term "corn syrup" has been invented to conceal the real nature of the article. The readers of THE JOURNAL are fully familiar with this trick. They all know how acetanilid is concealed to the general public under the name "phenyl-acetamid," or saccharin under the term, "benzoyl-sulphimid." Dr. Wagner says, "Glucose in this case being blended with cane syrup." I doubt very much if, with the stringent rulings now in force, under the new law, cane syrup and glucose could be considered "like" substances, to which alone the term "blend" can be applied. Certainly, not if the principles

which have been suggested as applicable to blended whiskies are to be held in other cases.

(*e*) The "official" admission of glucose as an ingredient of candy has no bearing on the case. Candy is not a food in a strict sense; it is eaten for pleasure, not for nourishment. The Washington authorities interpret the application of laws subject to revision by the courts; they do not decide fundamental points in science. My argument is that glucose is not cane sugar, milk sugar, invert sugar, or predigested starch, and therefore is not a proper substitute for either of these.

(*f*) I deny Dr. Wagner's assertion that glucose is not used as a cheapening agent. Such a statement is an insult to the understanding of men. Similarly, the statement that the wine-makers of certain regions prefer glucose to cane sugar for other reasons than economy, or that beer can not be properly made without glucose is unworthy of serious consideration. The dominating factor in all ordinary uses of glucose is to secure greater profit to the manufacturer without informing the consumer of the substitution.

"Its honor rooted in dishonor stands."

(*g*) In my opinion nothing that Dr. Wagner says diminishes the force of my criticism of the report of 1884. It was a wholly insufficient investigation, and if it were published today for the first time, would be met by all sanitarians and biologists with condemnation. That the framers of the report did twelve years ago say that they had seen no reason to change opinion is of no value in this issue. No investigation of importance had been made. None of them was in close touch with clinical medicine or physiologic investigation, and their later statement merely reflects the conclusions that they came to under the original insufficient investigation. Dr. Murrell's opinion is merely an opinion; its value can only be determined when we know the data on which he based it. Nor can Dr. Wiley's statement be regarded as final. The quotations given seem to be rather *obiter dicta* than formal opinions.

(*h*) I regret that, by a typographic error, I was made to say that glucose was found to contain sulphuric acid. It does, indeed, frequently contain sulphates, but I referred to sulphurous acid, and the context conforms to this. It was widely stated in the Philadelphia newspapers that the glucose trust had offered to settle all the cases and withdraw the objectionable product. I saw a letter from the office to this effect. I do not understand that the cases were "dismissed." They were "settled," the costs being paid by the trust.

The makers of this glucose knew that it contained sulphites; they knew that such compounds are foreign to natural foods; they knew or should have known that sulphites are harmful to the human system, and that heavy penalties had been imposed for the addition of these substances to meat products, yet they sold the adulterated article, widely, as of superior quality, without hesitation, supervision or notice.

HENRY LEFFMANN.

The letter to which Dr. Leffmann refers is doubtless the following, which was written by the Philadelphia attorney representing the trust:

Aug. 20, 1906.

Hon. B. H. Warren, Dairy and Food Commissioner:

Dear Sir:—In reference to the cases recently brought by your department against various glucose houses, syrup manufacturers and manufacturing confectioners, on the charge of selling food products containing sulphur dioxid, I represent the Corn Products Refining Company, of New York, manufacturers of the glucose used by all of the defendants referred to. Since it was the glucose used by the said defendants that contained the sulphur dioxid which inspired the prosecutions, my clients have assumed the onus of defending these cases.

As the result of a recent conference with the Corn Products Refining Company, I am prepared to admit for my clients that the glucose up to this time manufactured by them does contain a minute quantity of sulphur dioxid, and that under the Pennsylvania Food Law this fact renders their goods in violation of the Pennsylvania Act of 1895, under which all of the present cases are brought. I should like to say just here in their defense, however, and to emphasize this as deeply as I can, that in using sulphur dioxid they have followed a practice which has marked the manufacture of glucose ever since the industry began. The ingredient named is not used in any sense as an adulterant, but to bleach the glucose to a color sufficiently white for confectioners' use. The natural color of glucose is yellow, which makes the manufacture of white candies difficult, if not impossible.

Now, realizing that their goods, as at present made, are in violation of the Pennsylvania law, my clients have already given orders to their various representatives to withdraw immediately all bleached glucose from the market, not only the market in Pennsylvania, but also those in all other states and territories. Henceforth, they will make for the United States market only what is termed "neutral" glucose, that is to say, glucose, the color of which is natural light yellow. This glucose contains no sulphur dioxid whatever. It will not please manufacturing confectioners, yet under existing circumstances, we have no alternative but to produce it.

In addition to withdrawing all illegal glucose from the market and replacing it with glucose fully in conformity with the law, my clients will also assume the payment of all fines assessed against users of their glucose, where the prosecution pending against them springs from the presence of sulphur dioxid in their goods.

A number of these cases have already been brought in Philadelphia. In most of them hearings were waived, and the defendants held in bail. In others the defendants were held in bail after the hearings. I am greatly in hopes that you will see your way clear to dismiss these cases on payment of fines and costs, as it has been the custom of your department to do. My clients wish to dispose of the whole of this unpleasant situation as speedily as possible, and since the department has fully attained its object of securing the removal of illegal goods from the market, there would seem to be no good reason for pushing the cases further.

Further, the returning of these cases to court would, I respectfully submit, serve no necessary purpose, since the court, after having made it plain that the Corn Products Refining Company had not used sulphur dioxid for any illegitimate purpose, would scarcely impose more than the minimum penalty. At the same time, the carrying of the cases to the Quarter Sessions Court would entail on my clients additional costs and about $25 in each case. This would seem a useless hardship, since, as I repeat, the Dairy and Food Department has already won its campaign and attained its object.

In order that the matter may be settled and ended as speedily as possible, I will ask you to let me have, from the records of your department, a list of the sulphur dioxid cases already brought.

ELTON J. BUCKLEY.

Dysenteric Outbreak Due to Colon Bacillus.

WARREN, PA., Feb. 12, 1907.

To the Editor:—On Dec. 8, 1906, nearly 3,000 persons—approximately one-third of the population of Warren—were attacked within a short time by severe vomiting, profuse watery bowel discharges and some prostration. There was no fever, and most of the symptoms disappeared within 12 hours. Warning was at once given to boil the water used for drinking, and those who obeyed had no further symptoms. Others continued to suffer from attacks of diarrhea for a period of two weeks. In no case did any typhoid fever develop.

Analyses of the general water supply were made on December 8, and at frequent intervals thereafter, and the wells from which the public supply is obtained were found contaminated with sewage. The *Bacillus coli communis* was found in every sample examined. These wells are 60 feet deep, but they are located in a very insanitary region, near numerous outhouses and outlets of sewers, and on the banks of a river which frequently overflows.

Analyses made at irregular intervals in the past few years always showed these wells to be very pure, and it is believed that in some way surface washings contaminated them.

Up to Jan. 18, 1907, the colon bacillus was found; since then the water has not contained this organism, but the river has fallen several feet and there has been no rain.

That the water was the cause of the epidemic is evidenced by the facts that only users of city water were affected. No other community in a radius of 50 miles had any epidemic; persons who visited Warren and drank the water were attacked within 12 hours with the same malady. The milk and food supply come from a dozen different sources, and no one article of diet was generally used. Analysis of the water failed to show the presence of any other pathologic germ but the colon bacillus. The attack was similar in all cases and was more like an attack of cholera morbus than anything else.

Are there epidemics of a like nature on record in which the colon bacillus is the offender?

Warren is free from typhoid fever, but in April, 1906, a similar epidemic, lasting a few days, was noted. The number of persons affected was not nearly so great. It was attributed to the use of stagnant water from an emergency reservoir, but analyses of the water made at that time showed no evidence of sewage contamination.

M. V. BALL,
President, Board of Health.

[This letter is referred to in the Editorial department, this issue.—ED.]

Shoemaker's "Materia Medica and Therapeutics."

PHILADELPHIA, Feb. 20, 1907.

To the Editor:—While thanking you for your favorable notice of my "Materia Medica and Therapeutics," sixth edition, I would regard it as only just to me that a misconception on the part of the reviewer should be corrected, and I ask you to publish this explanation in an early issue of THE JOURNAL. Unlike other text-books, my work is based on both the United States Pharmacopeia and the British Pharmacopeia, so that it can be used in all parts of the world where these two standards are in force. Unfortunately, the committee of revision did not see its way clear to adopt the English titles of some drugs, like carbolic acid and sulphonal, but authorized "phenol," "hexamethylenamine," etc., instead. A careful examination of my work will show that these drugs are described under both of their official titles, with full explanation given under each heading. Unofficial new drugs, of course, are described under their proper names (and also trade names) with their chemical formulas appended. Your reviewer's statement that "Unofficial preparations . . . unfortunately are described under proprietary or trade names, regardless of the fact that some of them have been admitted to the Pharmacopeia under other names," is both contradictory and incorrect. Of course, a preparation can not be unofficial and, at the same time, be included in the Pharmacopeia, while to imply that trade names are used without giving the Pharmacopeial equivalents is stating the reverse of the truth. No confusion, for instance, can arise from the discussion of "carbolic acid" among the acids according to the British Pharmacopeia, when it is accompanied by the U. S. P. title of "Phenol hydratum," and there is also a cross reference under "Phenol" in its place.

JOHN V. SHOEMAKER.

The Etiology of Rheumatism in Children.

MAYWOOD, ILL., Feb. 16, 1907.

To the Editor:—Reading the theories, new and old, of the etiology of rheumatism in children, in THE JOURNAL of recent date, reminds me of a patient under my care two years ago. It was a typical case of croupous pneumonia in a boy of 7. The crisis was passed on the fifth day. The second day following he developed rheumatic fever with swollen and extremely painful ankle and knee joints on the right side, which several days later shifted to the left side. Under the usual treatment he made a good recovery. This suggests the probability of the cause of the rheumatism as being *Diplococcus pneumoniæ* infection, and offers a field for research.

O. E. MATTER, M.D.

Book Notices

A TEXT-BOOK OF DISEASES OF WOMEN. By J. C. Webster, B.A., M.D., F.R.C.P.E., F.R.S.E., Professor of Obstetrics and Gynecology in Rush Medical College, in affiliation with the University of Chicago. With 372 Illustrations and 10 Colored Plates. Cloth. Pp. 712. Price, $7.00. Philadelphia: W. B. Saunders Company, 1907.

It is a pleasure to review this excellent addition to American text-books on gynecology. The author has succeeded in adhering to the guiding principles which he formulates: To give prominence to the scientific basis of each subject under consideration, including the results of research in anatomy, histology, embryology, comparative anatomy, pathology and bacteriology; to study clinical phenomena in their widest relationships; to insist on caution in the adoption of new and insufficiently tried therapeutic measures and to emphasize measures proved by his own experience. As a general basis for the study of pathology and treatment he has necessarily devoted about one-seventh of the book to a full and very carefully prepared description of the anatomy of the female organs. This subject, well elucidated by 82 carefully selected illustrations, is presented in a chapter that gives a picture of the gross and microscopic structure, the development and the physiology that can hardly be excelled. Likewise the short chapter of ten pages on the genital tract in relation to micro-organisms gives a well presented résumé of the bacteriolgy of the genital tract in various conditions and the relations of micro-organisms to pelvic disease. The chapter on puberty and menstruation, including the diseases of menstruation, is as satisfactory a presentation of this difficult subject as is perhaps possible in the present unsettled condition of our knowledge. The author's treatment of neuroses in relation to pelvic disease in women, including hysteria and neurasthenia, together with his advice concerning the surgical treatment of chronic ovaritis and cystic degeneration of the ovaries in a later chapter will, perhaps, from some receive more criticism than anything else in the book. Although Webster insists that operative treatment of neurasthenia should not be placed in the forefront of therapeutic measures, yet the conclusion that marked neuroses may be associated with cystic degeneration of the ovaries, with slight or absent pelvic symptoms because of reflex nervous disturbances from ovarian tension, or because of disturbance of ovarian secretion, and the statement that ovarian resection or removal has been frequently followed by a cure, will arouse opposition. Professor Webster, however, is well trained in modern pathology, and when he enunciates his well-known views on this subject he probably finds himself still able to defend them as he has done in the past. The chapters on case taking and physical exercise and that on minor therapeutic measures are similar to those in other works. Local massage is condemned. Pessaries are described and in certain conditions advocated, but evidently without much predilection for them. Surgical technic is described in great detail and is well illustrated. Only a most carefully trained operator with a highly sensitive "surgical conscience" could have produced this excellent description of abdominal and vaginal operations. Considerable attention is given to the technic and the advantages of local anesthesia.

The description of the various pathologic conditions found in the pelvic organs and their treatment is presented with as great degree of detail and completeness as is possible, considering the limits imposed by the size of the book. It is impracticable as well as unnecessary in a review to attempt to give the views of the author on the different gynecologic problems of the present time. To some of these problems Webster has made original contributions. Others are discussed from a point of view of one familiar with all the literature of the day, and who himself has tested many of the therapeutic measures that have been advocated. The result is a modern presentation of gynecology, differing, perhaps, not so much from that of others, but very satisfying to the reader because of the confidence he intuitively feels in the masterly handling of all the subjects. It is this great excellence combined with the unusual thoroughness of the introductory chapters that will secure for this work a wide and admiring circle of readers.

THERAPEUTISCHE TECHNIK FUER DIE AERZTLICHE PRAXIS. By J. Schwalbe. Erster Halbband. Mit. 390 Abbildungen. Paper. Pp. 352. Leipsic: Verlag von Georg Thieme, 1906.

Therapeutics is acknowledged to be the first and most important task of the physician, and its recent developments have been largely in directions which demand a degree of technical knowledge and manual skill far in advance of that required when the physician's task was limited to the composition and writing of a compatible prescription. Many of the recent advances are, to be sure, in the domain of specialists, but their importance is such that it is almost imperative that the general practitioner should be well acquainted with them if he is to do the best for his patients and not lose them unnecessarily to the specialist.

The book before us is an attempt to furnish practicing physicians with an answer to the question what to do and how to do it. It is brought out under the general editorship of J. Schwalbe, with the collaboration of a number of eminent German clinicians. It is devoted to the technic of therapeutics and gives in detail the various procedures with the method of application and indications for their use, and in certain cases a comparison of various methods with a statement of their relative advantages and contraindications. The subjects treated in Vol. 1 are: Massage, gymnastics, the technic of mechanical hydrotherapy and thermotherapy, radiotherapy, preparation and application of medicines, surgical technic, and

the special treatment of the eye. From the text and illustrations it is evident that the author believes that massage is worthy of application by the physician personally.

In general, the methods prescribed comprise not only those requiring complicated apparatus and technic, but also those which the average practitioner may employ. The book is well illustrated and it is to be hoped that it may be made accessible to a larger circle of readers by translation into English.

ANIMAL MICROLOGY, Practical Exercises in Microscopical Methods. By M. F. Guyer, Ph.D., Professor of Zoölogy in the University of Cincinnati. Cloth. Pp. 240. Price, $1.75. Chicago: University of Chicago Press, 1906.

This book is designed especially for beginning students in microscopic work on animals, and describes in detail the various methods and technic of the elementary processes such as killing, hardening, preserving, staining, sectioning and mounting. Several appendices deal with the theory of the microscope, the use of stains and reagents, collecting material for an elementary course in zoölogy, etc. Directions for blood work and for bacteriologic technic as well as embryologic methods are given so that while the trend of the book is toward zoölogy proper, the medical student will find it very useful as a guide to microscopic work. A feature for which the book is to be highly commended is the clearness of the directions which make it easy for the student to follow the methods. It is well illustrated with pictures of instruments and apparatus.

GENERAL MEDICINE. Edited by F. Billings, M.S., M.D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, and J. H. Salisbury, M.D., Professor of Medicine, Chicago Clinical School. Practical Medicine Series, comprising Ten Volumes on the Year's progress in Medicine and Surgery under the Editorial Charge of G. P. Head, Professor of Laryngology and Rhinology, Chicago Postgraduate Medical School. Vol. VI. Series 1906. Cloth. Pp. 363. Chicago: The Year Book Publishers.

Nearly two-thirds of this volume is devoted to diseases of the stomach and intestines. Physiology, pathology, diagnosis and therapeutics serve as convenient heads under which is classified the large amount of new material from the recent literature. The functional and organic diseases and motor neuroses of the stomach have been the subject of much study and numerous contributions to literature, which the authors have epitomized. Typhoid fever is the subject of an important article, and malaria, yellow fever, dysentery and syphilis of the liver are among the topics discussed. The volume contains much of value and will be appreciated by the student of modern medicine.

A SHORT PRACTICE OF MEDICINE. By Robert A. Fleming, M.A., M.D., F.R.C.P.E., F.R.S.E., Lecturer on Practice of Medicine, School of the Royal Colleges, Edinburgh, etc. Cloth. Pp. 748. Price, $4.20 net. Philadelphia: P. Blakiston's Son & Co. 1906.

This volume is especially intended as a handbook for the student while attending lectures, and may serve as a review for the general practitioner, but its limited size necessitates such brevity that it can hardly be regarded as alone a sufficient guide for the medical man. The methods of diagnosis are mentioned, but the details are not given. As a student's manual the work is worthy of commendation.

A SYLLABUS OF MATERIA MEDICA. Compiled by W. Coleman, M.D. Professor of Clinical Medicine and Instructor in Materia Medica and Therapeutics in Cornell University Medical College, etc. Third edition, revised to conform to the Eighth Decennial Revision of the U. S. Pharmacopeia. Cloth. Pp. 186. Price, $1.00. New York: William Wood & Company.

This little book has been revised to accord with the eighth revision of the U. S. Pharmacopeia, in a way to increase its usefulness to the medical student as a supplement to the regular text-books on materia medica.

JAHRESBERICHT, Ueber die Fortschritte in der Lehre von den Pathogenen Mikroörganismen umfassend Bacterien, Pilze und Protozoen. By P. von Baumgarten and F. Tangl. Zwanzigster Jahrgang, 1904. Paper. Pp. 1106. Leipsic: Verlag von S. Hirzel, 1906.

The authors present a complete review of all the 1906 publications—books and current literature—on parasites, both animal and vegetable, general microbiology and disinfection. The book ought to be of great service to litterateurs and workers in pathology and bacteriology.

Miscellany

CLIPPINGS FROM LAY EXCHANGES.

DISEMBOWLED YET LIVED.

Marysville: J. B., for twenty years the wonder of medical science, is dead. Twenty years ago in a cutting affray B. was entirely disembowled. His intestines fell out and were entirely buried in sawdust. Bystanders picked him up and stuffed them back several hours before medical aid arrived. He recovered and later . . . died a natural death.—*Lima* (Ohio) *Gazette*, Aug. 12, 1906.

THE TRENDELENBURG POSTURE.

Prof. F. Trendelenburg . . . , inventor of the "Trendelenburg Posture," is visiting . . . in this city. . . . The Trendelenburg Posture consists simply of posterior operations by means of a specially contrived operating table, that in cases of a peculiarly delicate character have been remarkably successful . . . —Philadelphia *Public Ledger*, May 5, 1906.

GOOD WORDS FROM THE EDITOR.

. . . was kicked by a colt in the field, sustaining a compound fracture of his left arm, the bones protruding and causing much loss of blood until Dr. ——— came. The doctor has a large circle of patients, including J. A., who has a disease of the lymphatic glands never seen here before and pronounced incurable by several physicians but now improving to the surprise of all; also Mr. and Mrs. P. P., . . . and is treating the case of Mrs. M. A. L. with great skill it having been a nervous derangement of the system subject to more sudden changes than the weather, and who is up around and gaining.—*Belding* (Mich.) *Banner*, June 21, 1906.

LAY MEDICAL TERMS.

"Dr. I. is affected with lutus bulgaric."—*Hastings* (Neb.) *Tribune*, Aug. 10, 1906.——"Dr. C. . . . assisted in viscerating the right eye, . . . "—*Pocahontas* (Iowa) *Democrat*, May 17, 1906.——"Charles Le P. died . . . as a result of . . . lamphigitis."—*Hampshire* (Mass.) *Gazette*.——"Secretary H. was prostrated by an attack of artremya at his summer home . . . "—*Clinton* (Iowa) *Herald*.——"The causes of death are as follows. . . . manitition, . . . phthisis pulmonutes, . . . marosmus, . . . "—*Mahanoy City* (Pa.) *American*.——"General B. . . . died . . . of intestinal nephritis."—*Seattle* (Wash.) *Post-Intelligencer*.——" . . . in addition to hernia he is suffering from a water cancer."—*Middletown* (Conn.) *Penny Press*.——"He is in good hands and suffering with an attack of empiric fever."—*Rockford* (Ill.) *Republic*.——" . . . spasm of the diaplerague resulting from the sneeze caused the vertebræ to snap."—*St. Paul* (Minn.) *Pioneer-Press*.——"Mr. ———'s death was due to sorosis of the liver."—*Pittsburg* (Pa.) *Commercial Gazette*.——"Abijah L. . . . had an operation Wednesday for achanoids."—*Windsor Locks* (Conn.) *Journal*.——"Dr. M. W. . . . died suddenly of pleurisy of the brain."—*Cincinnati Enquirer*.——" . . . he became ill in this city with pulmonary peritonitis."—*Cincinnati Enquirer*.——" . . . , a four-months old . . . died . . . of what is known among surgeons as 'faraman ovale.'"—*Philadelphia Press*, Nov. 26, 1906.——" . . . the fatal disease at Marfa has been diagnosed as 'Stopplococus,' an affection of the throat."—*Galveston* (Texas) *News*, Nov. 11, 1906.

Osteomalacia and Suprarenal Extract.—Bossi had occasion to treat a woman in the eighth month of pregnancy in an advanced stage of osteomalacia. He conceived the idea that possibly the vasoconstricting power of suprarenal extract might modify the circulation through the uterus and ovaries and through the bone marrow. Extirpation of the suprarenals in animals is known to have a marked modifying action on the ovaries. He therefore gave the patient an injection of 0.005 gm. (about 1-12 gr.) of a 1 per thousand solution of suprarenal extract. It caused no disturbance, and the pain grew at once less intense, and the patient was able to sleep that night. Seven injections were given in the course of 7 days, the improvement progressing so rapidly that the patient regarded it

as an actual miracle. The bones were evidently in process of restitution, and the patient was clinically cured, entirely free from pain or other disturbances. Bossi urges research on gravid animals to determine the influence on the bones of partial or total removal of the suprarenal capsules, adding that the results in this case were so prompt and so marvelous that hopes in regard to suprarenal treatment of osteomalacia are certainly justified.—*Policlinico*, xiv 2, 1907.

Devices to Prevent Asphyxiation.—Among valuable first aid devices are the masks for protection against irrespirable gases and which enable divers, miners, firemen, etc., to penetrate safely places where life would be sacrificed without them. According to the *Scientific American*, the masks are of two kinds: One is provided with long tubing which supplies oxygen or air from a bellows manipulated by an assistant; the other is provided with a portable tank of compressed oxygen which is gradually supplied while the carbon dioxid formed is absorbed by passing the expired air over caustic soda, after which it is charged with oxygen and breathed over in this way again and again. Where the noxious gas does not injure the eyes a mask can be fitted over the mouth and nose with an inlet tube for fresh air and an outlet with a valve which may open directly into the poisonous atmosphere. Such an apparatus can be used only a short distance from the point where access to fresh air can be had. For penetrating mines, etc., an apparatus provided with a supply of oxygen must be used. The value of these devices in the rescue of miners overcome by poisonous "choke damp" is incalculable. The rescuers can pass quickly and safely to the scene of disaster and bring the unconscious miners to the surface for resuscitation. The supplementary supply of oxygen can be used by artificial respiration to hasten the process of resuscitation. There may be in this application an opportunity for the extension of the use of such masks to the resuscitation of the drowned or those accidentally asphyxiated by illuminating gas.

Unnecessary Vivisection.—"A case of cruel vivisection," says *American Medicine*, "was described at the recent meeting of the American Association for the Advancement of Science, by the experimenter, John B. Watson, of the University of Chicago. He subjected a rat to various operations, blinding it, extirpating the olfactory nerve, freezing its feet, and covering its head with collodion—all to find out whether it had a sixth sense which would enable it to escape from a complex cage. Though a rat does not suffer as a man, yet every neurotic person is thoroughly convinced that the pain sense in every animal is as acute as in himself. Such useless cruelties, therefore, give to the morbid antivivisectionists a real basis for their crusade. The association should not have permitted this paper on its program and the cruel experiment should never have been made. We are glad to see that Watson has been censured by several conservative lay journals, which have always defended vivisection done with the direct view of obtaining or proving important facts. They very properly condemn experiments which can prove nothing. The science of medicine is now advancing by leaps and bounds through what might be called vivisection, and it is deplorable that any one should cast discredit on a necessity of modern existence. We hope to hear of no further useless cruelty."

Cause of Fever After Splenectomy.—Herczel reports (*Wien. klin. Wochschr.*, xx, 123, 1907) the later history of 5 patients on whom he performed splenectomy between 1904-6. All were completely cured of their symptoms by the operation and have been in good health since. In 2 cases the enlargement of the spleen was of malarial origin and was accompanied by ascites and anemia. In another case a wandering spleen was enlarged, with secondary anemia. In another, the enlargement of the spleen was accompanied by hypertrophy of the liver, and in the fifth the trouble was an echinococcus cyst in the spleen. He found that the febrile conditions sometimes observed after the operation were the result of aseptic necrosis of the fat tissue around the stump when the pedicle was ligated *en masse*. Since he has made a practice of ligating the vessels in the hilus separately, close to the spleen, healing proceeds smoothly without tendency to rise of temperature.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Secret Commissions Barred in Omaha.

At a recent meeting the Omaha (Douglas County), Nebr., Medical Society adopted the following rules:

RULE 1.—Any member of this society who shall pay or offer to pay a commission for any case or shall accept or solicit a commission for sending a case, shall be expelled from the society.

RULE 2.—Any accusation that any member has been guilty of any of the offienses mentioned in Rule 1 shall be referred to the Board of Censors, who, if they deem the proof sufficient to warrant it, shall summon the accused to appear before the society at its next regular meeting. If the accused, without good excuse, shall fail to appear, or if, after hearing the evidence, the majority of those present shall decide that he is guilty, his name shall forthwith be dropped from the society's rolls. In case the Board of Censors think the evidence insufficient to warrant bringing the accusation before the society, the accuser shall have the right to introduce it at any regular meeting, when it shall be acted on as if it had been reported by the Board of Censors.

RULE 3.—Any member so expelled can not be reinstated for at least six months, and if he should be reinstated and should a second time be found guilty of a similar offense, he can never again become a member of the society.

It is further resolved that our delegates to the next Nebraska State Medical Society meeting be instructed to introduce and push a similar set of rules for the State Society with a recommendation that the matter be carried on to the American Medical Association.

Commenting on the above, Dr. Harold Gifford, Omaha, says:

"After considerable discussion, in which the only discordant note was the suggestion that action be postponed, the rules and resolution were unanimously adopted. It was predicted that these rules will not prevent commission giving on account of the difficulty of proving the offense, but it was answered that because we can not convict all thieves and gamblers there is no reason why we should not have a law which will enable us to punish them if they are convicted. I believe this is the first positive action to be taken by any society in the United States; if I am incorrect in this belief I shall be glad if any of your readers will correct the error."

In partial answer to Dr. Gifford concerning previous action on this point, we are able to give the following facts:

The House of Delegates of the American Medical Association, at the New Orleans session in 1902, adopted the following resolutions:

Resolved, That the House of Delegates recommend the adoption by county medical societies in affiliation with this body, of the following resolution:

Resolved, That any member of a county medical society proved guilty of division of fees, either the giving or the receiving of a part of a fee, without the full knowledge of the patient, be held guilty of misconduct, for which he may be expelled from the county medical society. (THE JOURNAL, xxxviii, 1661.)

A number of county societies have taken action on this subject, among them the Chicago Medical Society, which, in 1905, adopted a resolution which read as follows:

It is derogatory to professional character for physicians to pay, or to offer to pay, commissions to any person whatsoever, who may recommend to them patients requiring general or special treatment, or surgical operations. It is equally derogatory to professional character for physicians to solicit or receive such commission.

Oppose Contract Practice.

The Westerly (R. I.) Physicians' Association has adopted resolutions against lodge or contract practice. The secretary of the association, Dr. W. A. Hillard, reports that every physician in the town has subscribed to these resolutions.

Organization in England.

In the *British Medical Journal*, Dec. 22, 1906, is published an address by Sir Victor Horsley on the necessity of union in the medical profession, with special reference to so-called trade-unionism of which physicians are sometimes accused. In the course of his remarks he said that what is wanted in the profession is absolute unionism, collective action which will result in the laying of a foundation on which new things and new ideas can take root, flourish and fructify. By uniting and helping each other the members of the medical profession will further the progress of medical science. Therefore, unionism in the medical profession can not be objected to. He says that it is our duty to be trade unionists, in that we should help our professional colleagues by associating ourselves together closely as a profession, and the way to do that at the present day is to have every member of the profession join the only

existing collective organizations—in Great Britain the British Medical Association, and in this country the American Medical Association.

Sir Victor says that although such an association might not necessarily help some men in life, it would be of the utmost utility and helpfulness to many to whom life does not come so easy, who do not see so readily as to how they are going to support their families or educate their children. It is just those, he says, who do not want to take anything out of an association who ought to put the most into it, because they can best afford to do it, and thereby help on the material and moral progress of their less fortunate brethren. All, therefore, should join the association, not only for their own profit, but to secure that of others.

What are the interests of the community as compared with those of the general public? Sir Victor pronounces three chief interests. First, the standard of professional life and professional conduct, to be maintained at a high level; second, that a medical practitioner shall receive a fair compensation for his work; and third, that the state should recognize the importance, the difficulties, and the national responsibilities of medical work. The satisfaction of these requirements or interests will secure to the public the help of a thoroughly efficient medical service. Therefore, the interests of the public are identical with the interests of the medical profession.

More Societies Adopt Resolutions.

The following societies have adopted resolutions pledging their support in the campaign against the reduction of insurance examination fees:

Barbour County (Alabama) Medical Society.
Greene County (Alabama) Medical Society.
Clarke County (Georgia) Medical Society.
Worth County (Georgia) Medical Society.
Whiteside County (Illinois) Medical Society.
Western Kansas Medical Society.
Jackson County (Mississippi) Medical Society.
Leflore County (Mississippi) Medical Society.
Platte County (Missouri) Medical Society.
Mercer County (New Jersey) Medical Society.
Chaves County (New Mexico) Medical Society.
Columbia County (New York) Medical Society.
Troup County (Georgia) Medical Society.
Wise County (Virginia) Medical Society.
Dane County (Wisconsin) Medical Society.
Whitman County (Washington) Medical Society.

The Secretary of the Ionia County (Michigan) Medical Society in the report of the annual meeting in the *Journal of the Michigan State Medical Society* says: "The society has awakened to the fact that we have in and among ourselves the necessary qualifications for a wide-awake, progressive medical society. We have as fine a band of deep-thinking, hard-working, clear-headed medical men as it has been my privilege to meet."

The Rutherford County (Tennessee) Medical Society held two meetings in December, which were mainly devoted to the consideration of practical questions. Papers were read on "The Business Side of the Medical Profession and on Medical Ethics." This society is so well pleased with its experiment of meeting semi-monthly that it has adopted an amendment to the constitution providing for two meetings each month. The society adopted the fee schedule used by the physicians of Murfreesboro as its standard.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

PREPARATION OF CHROMICIZED CATGUT.

CLEVELAND, OHIO, Feb. 21, 1907.

To the Editor:—Please publish some methods of preparing chromicized catgut having varying degrees of resistance to absorption. WALTER G. STERN.

ANSWER.—The method of preparing chromicized catgut was given in THE JOURNAL, Sept. 1, 1906, p. 703, as follows: "The gut is freed from fat by soaking for twenty-four hours in ether. It is then soaked for twenty-four hours in a watery solution of chromic acid from 1 to 4 per cent., dried in an oven, and boiled in cumol." Most authorities recommend 4 per cent. solution of chromic acid. The length of time which the material will resist absorption by the tissues varies according to the size of the catgut. H. Cabot found (*Boston Med. and Surg. Jour.*, March 27, 1902), that chromicized catgut No. 0 had little strength at the end of four weeks, No. 1 full strength at five to eight weeks, and No. 2 full strength at eight to twelve weeks. DaCosta states (Modern Surgery, 4th edition, 1903, p. 51), that chromicized gut No. 3 and No. 4, will remain unabsorbed in the tissues from four to six weeks.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Feb. 23, 1907:

Jones, Percy L., asst.-surgeon, granted two months' leave of absence.

Bradley, Alfred E., surgeon, will, on the completion of his duty at Fort Slocum, N. Y., proceed to Fort Sheridan, Ill., for the purpose of packing and shipping public property, and will then proceed to Jefferson Barracks, Mo., for station.

Usher, F. M. C., and Webb, Walter D., asst.-surgeons, appointed members of examining board to meet at St. Paul, Minn., for the examination of officers of the Quartermaster's Department for promotion.

Morse, Charles F., asst.-surgeon, will, in addition to his present duties at Fort Howard, Md., attend Fort McHenry, Md., during the temporary absence of Capt. Kent Nelson, asst.-surgeon.

Stephenson, William, surg., relieved from duty at the Presidio, San Francisco, Cal., and, on arrival of 25th Infantry at San Francisco, will report to the commanding officer for duty to accompany that command to the Philippine Islands; on arrival at Manila, will report to the commanding general, Philippines Division, for assignment to duty.

Havard, Valery, asst.-surgeon-general, is detailed to represent the Medical Department of the Army at Convention of the Interstate National Guard Association, to be held at Columbia, S. C., March 25, 1907.

Brown, Ira C., contract surgeon, relieved from duty at Fort McIntosh, Texas, and ordered to accompany the Third Battalion, 25th Infantry, to the Philippine Islands for duty.

Ames, Roger P., contract surgeon, left Fort St. Philip, La., on leave of absence for one month.

Mason, George L., dental surgeon, left Fort McPherson, Ga., and arrived at Fort St. Philip, La., for temporary duty.

Branch, Frederick D., contract surgeon, relieved from duty at Fort Wood, N. Y., and ordered to Fort Preble, Me., for duty.

Mount, James R., contract surgeon, arrived at San Francisco, Cal., from Philippine service, and ordered to the Presidio of Monterey, Cal., for duty.

Bell, Leonard P., contract surgeon, arrived at San Francisco, Cal., for leave of absence from the Philippines Division.

Hutson, T. Ogier, contract surgeon, left Fort Moultrie, S. C., and arrived at Fort St. Philip, La., for temporary duty.

Jones, Edgar C., contract surgeon, ordered from Allegheny, Pa., to the Army General Hospital, Fort Bayard, N. M., for duty.

Marshall, John S., examining and supervising dental surgeon, granted sick leave of absence for one month.

Stallman, George E., dental surgeon, arrived at San Francisco, Cal., from Philippines service, and ordered to Fort Sam Houston, Texas, for duty.

Stone, Frank P., dental surgeon, relieved from duty at Fort Sam Houston, Texas, and ordered to Macon, Mo., for annulment of contract.

Wing, Franklin F., dental surgeon, left Fort Washakie, Wyo., and arrived at Fort Robinson, Neb., for temporary duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Feb. 23, 1907.

McLean, N. T., asst.-surgeon, discharged treatment Boston Hospital, and ordered to duty at Navy Yard, Boston.

Grieve, C. C., P. A. Surgeon, commissioned P. A. surgeon from June 2, 1906.

Ryder, C. E., P. A. surgeon, commissioned P. A. surgeon from June 26, 1906.

Bacon, S., acting asst.-surgeon, ordered to duty Naval Hospital, Norfolk, Va.

Moore, J. M., surgeon, to Norfolk Hospital.

Furlong, F. M., surgeon, detached Boston Hospital, to duty in connection with fitting out of *Vermont* and duty aboard that vessel when commissioned.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Feb. 20, 1907:

Banks, C. E., surgeon, granted leave of absence for 14 days from February 21.

White, J. H., surgeon, directed to proceed to Baton Rouge, La., for special temporary duty, on completion of which to rejoin station at New Orleans.

Williams, L. L., surgeon, directed to report at Bureau for special duty, on completion of which to rejoin station at Baltimore.

Lumsden, L. L., P. A. surgeon, granted leave of absence for a period of 30 days from February 18, on account of sickness.

Corput, G. M., P. A. Surgeon, directed to proceed to Austin, Texas, for special temporary duty, on completion of which to rejoin station at Galveston.

Roberts, N., asst.-surgeon, granted leave of absence for 7 days from Feb. 11, 1907, under Paragraph 191 of the Regulations.

Gribble, B. C., acting asst.-surgeon, granted leave of absence for five days, from Feb. 14, 1907, under Paragraph 210 of the Regulations.

Schwartz, L., acting asst.-surgeon, granted leave of absence for 5 days from Feb. 16, 1907, under Paragraph 210 of the Regulations.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public-Health and Marine-Hospital Service, during the week ended Feb. 22, 1907:

SMALLPOX—UNITED STATES.

Florida: Lakeland, Jan. 26-Feb. 2, 6 cases; Feb. 9-16, 3 cases.
Georgia: Augusta, Feb. 5-12, 3 cases.
Illinois: Chicago, Feb. 9-16, 1 case.
Indiana: Indianapolis, Feb. 3-10, 4 cases.
Maryland: Baltimore, Feb. 9-16, 1 case.
Minnesota: General, Dec. 1-Jan. 28, 277 cases, 1 death.
Missouri: St. Louis, Feb. 9-16, 1 case.
Montana: Helena, Jan. 1-31, 1 case.
North Carolina: Charlotte, Feb. 9-16, 1 case.
Ohio: Cincinnati, Feb. 8-15, 2 cases.
Utah: Ogden, Jan. 1-31, 3 cases.
Washington: Spokane, Feb. 2-9, 13 cases.

SMALLPOX—FOREIGN.

Argentina: Buenos Ayres, Dec. 29-Jan. 5, 1 case.
Brazil: Bahia, Dec. 29-Jan. 12, 6 cases.
Canada: Toronto, Jan. 9-26, 2 cases.
China: Shanghai, Jan. 6-13, 1 case.
France: Paris, Jan. 19-26, 19 cases.
Great Britain: Cardiff, Jan. 19-Feb. 2, 2 cases, 1 death; Hull, Jan. 19-26, 1 death; Liverpool, Jan. 19-Feb. 2, 2 cases; Southampton, Jan. 26-Feb. 2, 1 case.
India: Calcutta, Dec. 29-Jan. 5, 12 deaths (epidemic); Rangoon, Dec. 29-Jan. 5; 1 death.
Mexico: Vera Cruz, Jan. 26-Feb. 2, 1 case, 1 death.
Netherlands: Rotterdam, Jan. 26-Feb. 2, 5 cases, 1 death.
Russia: Moscow, Jan. 5-26, 11 cases, 8 deaths; Odessa, Jan. 12-19, 13 cases, 5 deaths.
Turkey: Constantinople, Jan. 20-27, 1 death.

YELLOW FEVER.

Mexico: Tuxpam, Jan. 22-29, 1 case, 1 death.

CHOLERA—INSULAR.

Philippine Islands: Provinces, Dec. 15-22, 19 cases, 10 deaths; Dec. 22-29, 20 cases, 11 deaths; Dec. 27-Jan. 5, 21 cases, 12 deaths.

CHOLERA—FOREIGN.

India: Bombay, Jan. 8-15, 3 deaths; Calcutta, Dec. 29-Jan. 5, 76 deaths; Cochin, Dec. 28, 1 death; Rangoon, Dec. 29-Jan. 5, 18 deaths.

PLAGUE.

Egypt: Ismailia, Jan. 25-29, 1 case, 1 death; Assiout Province, Jan. 24-29, 1 case.
India: General, Dec. 29-Jan. 5, 12,918 cases, 10,363 deaths; Bombay, Jan. 8-15, 33 deaths; Calcutta, Dec. 29-Jan. 5, 10 deaths; Rangoon, 18 deaths.
Japan: General, Jan. 1-19, 9 cases.
Mauritius: Dec. 13-Jan. 3, 65 cases, 43 deaths.
Siam: Bankok, Nov. 21, 1 death.

Marriages

O. P. GRANT, M.D., Cantrall, Ill., to Miss Mabel Irene Green, of Chicago, January 9.

OSCAR F. BLANK, M.D., to Miss Diana Van Gordon, both of Bethlehem, Pa., February 1.

JOHN JOSEPH HECK, M.D., Baltimore, to Miss Nina Davis, at Washington, D. C., February 12.

EDWARD M. BUCK, M.D., Montrose, Iowa, to Miss Kathryn Rowe, at Summitville, Iowa, February 2.

HENRY J. POOL, M.D., Port Clinton, Ohio, to Miss Louise Debreaux, of Detroit, Mich., February 6.

FRANK C. WITTER, M.D., Ann Arbor, Mich., to Miss Lena Lyle Armstrong, of Lapeer, Mich., February 14.

WALTER M. REEDY, M.D., Scranton, Pa., to Miss Mary Theresa Healey, of Dunmore, Pa., February 1.

RICHARD F. NOTH, M.D., American Falls, Idaho, to Miss Genevieve O'Donnell, of Haverhill, Minn., February 12.

FRANCIS J. ANTOINE, M.D., to Miss Rose Marie Garvey, both of Prairie du Chien, Wis., at Racine, Wis., February 11.

JOHN A. CALDWELL, M.D., Cincinnati, to Miss Ortha C. Featherstone, of New York, at Lowell, Mass., February 14.

WILLIAM HEWSON BALTZELL, M.D., Baltimore, to Miss Alice Steele Cheney, of Elm Bank, Needham, Mass., February 12.

RAY WALLACE MOE, M.D., Peekskill, N. Y., to Miss Ella Madalene Greeley, of Long Island City, N. Y., February 10.

JOHN DIEDRICH MORITZ, M.D., Piedmont Lodge, Keswick, Va., to Miss Martha Washington Jennings, at Baltimore, February 12.

Deaths

Charles K. Yancey, M.D. University of Virginia, Department of Medicine, Charlottesville, 1870; passed assistant surgeon, United States Navy; who entered the service May 1, 1871; was made passed assistant surgeon June 12, 1876, and was retired May 21, 1880, on account of disability incurred in line of duty; who had been an inmate of the Government Hospital for the Insane, Washington, for 29 years, died in that institution, from tubercular osteitis of the right tibia, February 9, aged 58.

Adolph Rupp, M.D. New York University Medical College, New York City, 1877; a member of the American Medical Association and the New York Academy of Medicine; a specialist in diseases of the ear, nose and throat, and heart and lungs; the translator of Ziemssen's "Cyclopedia of General Medicine;" a member of the staff of several hospitals and dispensaries in New York City, died at his home in New York, February 7, from heart disease, following influenza, aged 50.

Henry W. Elmer, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1869; a member of the American Medical Association; for 24 years secretary of the Cumberland County Medical Society, and for many years chairman of the standing committee of the Medical Society of New Jersey, died at his home in Bridgeton, where his father, grandfather and great-grandfather had been practitioners before him, February 13, after an illness of two years, aged 59.

William O. Lantz, M.D. Jefferson Medical College, Philadelphia, 1882; of Lemasters, Pa.; a member of the state and county medical societies, and formerly president of the Franklin County Medical Society, died in Johns Hopkins Hospital, Baltimore, a few hours after an operation for complicated disease of the liver, February 15, aged 51. His funeral at Chambersburg was attended by a delegation from the county medical society, which also furnished pall-bearers.

George E. Rosenthal, M.D. College of Physicians and Surgeons, Chicago, 1902; a member of the American Medical Association; assistant surgeon of the Illinois Sailors and Soldiers' Home, Quincy, Ill.; attending surgeon and pathologist at the Blessing Hospital, and secretary of the Adams County Medical Society, died in Quincy, February 17, from typhoid fever, aged 34.

Henry C. Faulkner, M.D. Leonard School of Medicine, Medical Department of Shaw University, Raleigh, N. C., 1894; formerly a practitioner of Chicago, but for the last four years a missionary on the West Coast of Africa; secretary of the board of health, Monrovia, Liberia, and city and harbor physician, died from pneumonia, Dec. 11, 1906.

John G. Keith, M.D. University of Louisville (Ky.) Medical Department, 1891; of Leadville, Colo.; a member of the American Medical Association; a veteran of the Civil War, died in St. Louis, Mo., February 16, from paralysis following a lightning stroke last summer, aged 58.

Jacob F. Whiting, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1879; a member of the American Medical Association, and an esteemed practitioner of Spencer Brook, Minn., died at his home in that place, February 13, from pneumonia, aged 62.

Thomas D. Bedford, M.D. Bellevue Hospital Medical College, New York City, 1882; of Kansas City, Mo.; coroner of Jackson County, Mo., in 1897, died at University Hospital, Kansas City, February 13, from pneumonia, complicated by chronic cardiac disease, aged 53.

Ernst von Schulenberg, M.D. University of Buffalo (N. Y.) Medical Department, 1880; a well-known physician and clergyman of Sandusky, Ohio, and the leading historian of that city, died at his home, February 11, after an illness of one month, aged 57.

William H. Rowe, M.D. University of Iowa, College of Homeopathic Medicine, Iowa City, 1885; of Waukesha, Wis., died February 3, at the Northern Hospital for the Insane, Oshkosh, Wis., where he had been an inmate for a year, aged 50.

Weston D. Bidaman, M.D. University of Buffalo (N. Y.), Medical Department, 1878; a member of the state and county medical societies, died at his home in Buffalo, February 15, from heart disease, after an illness of eight months, aged 55.

Henry Warner, M.D. Eclectic Medical College of Philadelphia, 1877; of Hampden, Mass.; a veteran of the Civil War, died suddenly from cerebral hemorrhage, while making a professional call in East Longmeadow, February 12, aged 59.

George **Ross Griffith, M.D.** Starling Medical College, Columbus (Ohio) 1872; a member of the Washington County (Pa.) Medical Society, died at his home in Carnegie, February 4, from nephritis, after an illness of two years, aged 60.

John **F. English, M.D.** University of Vermont, College of Medicine, Burlington, 1898; of Providence, R. I., died at the Rhode Island Hospital, Providence, February 9, from lobar pneumonia, after an illness of three days, aged 31.

Frederick **Stanley Cowles, M.D.** Yale Medical School, New Haven, Conn., 1893; a member of the state and county medical societies, died at his home in Essex, Conn., from heart disease, after a long illness, February 12, aged 37.

John **Quincy Adams Hollister, M.D.** Eclectic Medical Institution, Cincinnati, 1878; a veteran of the Civil War, died at his home in Mount Vernon, N. Y., February 10, from cerebral hemorrhage, after an illness of two years, aged 69.

John **V. Martin, M.D.** Toledo (Ohio) Medical College, 1896; of Toledo; a member of the state and county societies, died at St. Vincent's Hospital, Toledo, February 9, from typhoid fever, after an illness of two weeks, aged 44.

Perry **Waltman, M.D.** Eclectic Medical Institute, Cincinnati, 1882; formerly of Birmingham, Ohio, died at the home of his sister in Mansfield, Ohio, February 11, from paralysis, after an invalidism of three years, aged 50.

Wesley A. Derhamer, M.D. Jefferson Medical College, Philadelphia, 1875; a member of the state and county medical societies, died at his home in Lehighton, Pa., February 17, after an illness of one week, aged 57.

William E. Carroll, M.D. New York University Medical College, New York City, 1890; a member of the state and county medical societies, died at his home in Taunton, Mass., February 18, after a short illness.

Fred **Henry Messenger, M.D.** University of Iowa, College of Homeopathic Medicine, Iowa City, 1906; of Plaza, N. D., died at his home February 5, from septicemia due to infection after vaccination, aged 25.

William J. Chappell, M.D. College of Physicians and Surgeons, Baltimore, 1886; died at his home in Baltimore, February 7, from the effects of cyanid of potassium taken with suicidal intent, aged 49.

Emery **Gregg Ireland, M.D.** Rush Medical College, Chicago, 1899; formerly of Miles City, Mont., was found dead in his bed at the home of his cousin in Pittsburg, Kan., February 5, from heart disease.

Ulysses Sidney Grant Binger, M.D. Milwaukee (Wis.) Medical College, 1899; of Lovelocks, Nev., died from pneumonia, at a ranch 10 miles south of that place, February 8, after an illness of one week.

Henry C. Briggs, M.D. Jefferson Medical College, Philadelphia, 1847; of Homeville, Va.; at one time superintendent of public schools of Sussex County, died suddenly, February 11, aged about 70.

Michel **Omer Routhier, M.D.** summa cum laude, École de Médecine et de Chirurgie, Montreal, 1893; died at his home in Lawrence, Mass., from pneumonia, after an illness of three weeks, aged 46.

Adolph C. Sontag, M.D. Wisconsin College of Physcians and Surgeons, Milwaukee, 1904; died at the home of his parents in Milwaukee, February 8, after an illness of six weeks, aged 28.

James H. Delany, M.D. Bellevue Hospital Medical College, New York City, 1886; was found dead in his office in Erie, Pa., February 12, from heart disease following influenza, aged 54.

T. Scott **McFarland, M.D.** Chicago Homeopathic Medical College, 1894; formerly of Sedalia, Mo., died at his home in Tucson, Ariz., February 11, after a long illness, aged 38.

James **Long, M.D.** St. Louis Medical College; who retired from practice in 1882; died at his home in St. Louis, January 16, from nephritis, after an illness of one week, aged 68.

Thomas **A. Corlett, M.D.** Detroit (Mich.) College of Medicine, 1892; died at his home in Manton, Mich., February 9, from angina pectoris, after a long illness, aged 43.

Leland M. Wright, M.D. Washington University, Medical Department, St. Louis, 1867; died at his home in Altona, Mo., February 8, from cerebral hemorrhage, aged 66.

John **Edward Bolte, M.D.** Baltimore Medical College, 1891; registrar of wills for Baltimore County, Md., died at his home in Harrisonville, Md., February 16, aged 41.

Francis A. Reynolds, M.D. Columbus (Ohio) Medical College, 1879; died at his home in Kendallville, Ind., February 15, after a lingering illness, aged 62.

Deaths Abroad.

F. Fajardo, M.D., director of the Bacteriologic Laboratory at Rio de Janeiro, president of the Academia Nacional de Medicina, etc., died recently, presumably from the effects of a preventive injection of antiplague serum.

Society Proceedings

COMING MEETINGS.

Medical Society of Missouri Valley, Omaha, Neb., March 21-22, 1907.
American Association of Anatomists, Madison, Wis., March 27-29.
Med. Assn. of District of Columbia, Washington, April 2.
Tennessee State Medical Assn., Nashville, April 9.
Mississippi State Medical Association, Gulfport, April 10.
South Carolina Medical Association, Bennettsville, April 10.
Medical Assn. of State of Alabama, Mobile, April 16.
Florida Medical Association, Tampa, April 17.
Medical Association of Georgia, Savannah, April 17.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Regular Meeting, held Jan. 3, 1907.

The President, DR. WILMER KRUSEN, in the Chair.

Vaginal Hysterectomy.

DR. GEORGE ERETY SHOEMAKER reported the histories of ten patients operated on. Each made a normal recovery. Nearly all the patients had passed through the menopause. Great stress was laid on the importance of paying heed to postmenopausal bleeding. The danger of overlooking early malignancy in the examination of scrapings was emphasized.

DISCUSSION.

DR. JOHN C. HIRST prefers atmokausis in a case of persistent bleeding where examination of the scrapings shows no malignancy.

DR. BROOKE M. ANSPACH believes there are cases of persistent metrorrhagia or menorrhagia requiring hysterectomy in which no pathologic lesion of the endometrium exists and in which therefore examination by curettement is absolutely negative. In these cases the lesion is in the myometrium and they are amenable only to radical treatment.

DR. C. C. NORRIS believed that in the large majority of cases the microscope can be relied on to give an absolute diagnosis in all cases of carcinoma of the fundus uteri. The chief sources of error in the pathologic diagnosis, he thinks, are that the tissue is often improperly hardened, that it is not all cut and consequently not all examined, and that in some cases the diagnosis is made by men not especially experienced in this line of work.

Case of Chorioepithelioma.

DR. BROOKE M. ANSPACH and DR. HENRY R. ALBURGER reported a case of chorioepithelioma which came to operation and autopsy. The history did not very closely suggest the disease, which was diagnosed only after curettage and the examination of scrapings. Widespread metastases were found at autopsy, involving almost all of the visceral organs except the spleen. The tumor did not contain chorion villi. The ovaries were riddled with Graafian follicle cysts. There was very little lutein tissue present.

Treatment of Eclampsia.

DR. JOHN C. HIRST'S conclusions as to the treatment of eclampsia, based on the cases at the University of Pennsylvania Maternity, were as follows:

The routine treatment consisted of: 1. Chloroform to avert the attack, if possible. 2. Fifteen minims of fluid extract of veratrum viride hypodermically. 3. Wash out stomach and through the tube introduce 2 ounces of castor oil and four drops of croton oil. 4. Hot vapor bath or hot pack, for thirty minutes, in every four hours. 5. Hypodermoclysis of one pint of salt solution under the breast every eight hours. 6. If convulsions recur, repeat the veratrum viride in five minim

doses, every hour, for three doses, and then if blood pressure is still high and the patient is cyanotic, venesection is performed, removing from 8 to 16 ounces of blood. 7. Under ordinary circumstances let the labor alone. The use of morphin and pilocarpin is restricted to desperate cases only. Venesection is not done, as a rule, until veratrum viride has been given a trial.

Accouchement forcé is used only under the following conditions: 1. When the patient is far advanced in spontaneous labor, forceps are applied. 2. If patient is seen very early after the first onset of convulsions, it may be advisable to interfere. 3. If patient is going from bad to worse under treatment, the uterus is emptied as a last resort. The method employed is either vaginal hysterotomy (the so-called vaginal Cesarean section) and forceps, or the Pomeroy bag, followed by forceps. The latter method is probably the better. The cases studied were 88 cases of eclampsia and 278 cases of albuminuria. This treatment gave a mortality, excluding cases brought in in a moribund condition, of 13.4 per cent. Of the cases of albuminuria 40 had had eclampsia in previous labors (one four times), but escaped under treatment.

DISCUSSION.

DR. RICHARD C. NORRIS said that at the Preston Retreat he sees on an average two or three cases of eclampsia in a year, and four or five cases in consultation, but he has had only one case of eclampsia in his private practice in fifteen years. He has never done Cesarean section nor used a Bossi dilator in eclampsia at the Preston Retreat. When the cervix is dilated, forceps or version is resorted to, and prior to dilatation eliminative treatment is vigorously employed, while a bag is used to obtain dilatation.

The method of elimination by the bowel he regards as the most valuable. He has yet to see a woman die of eclampsia from whom he was able to secure from 12 to 20 stools in twenty-four hours. This is his first aim in treating any case. Two ounces of Epsom salts are first administered, and if omited, then three to five drops of croton oil are given in sweet oil. The danger was pointed out of excessive amounts of salt solution unless the purging or sweating is free. Dr. Norris said that vertrum viride should be used with caution, in some cases of eclampsia being distinctly contraindicated. If the condition is of sudden onset, veratrum would be useful in moderate, frequently repeated doses until it has markedly slowed the pulse. Morphia he usually does not use.

There should be a differentiation as far as possible between the various types of the disease. Cases showing a slow onward progress suggest a kidney type, and in such cases morphia would be a bad drug to give, especially in the interstitial type, as recently pointed out by Dr. Tyson. Other groups of cases may be looked on as of intestinal origin, and here large doses of morphia to control convulsions and copious lavage of the bowel would be of value. Another group of cases, hepatic in origin, he has always felt to be the most hopeless. Admitting that there is nothing to prove the theory of the syncytial origin of the toxins of eclampsia, he is inclined to group those as possibly of syncytial origin in which the onset is sudden and without premonitory signs. In such a case he would not hesitate to either stretch or cut the cervix and deliver the patient rapidly. The plan of treatment to which he has always objected is the routine use of vigorous surgical procedure. He admits that the literature of the world in the last year or two shows a steadily decreasing mortality from the aggressive plan of surgical treatment, but he believes the secret of this to be that all cases are being so treated, and that the mild ones that would have gotten well without the surgical treatment are credited to it, and that the worst cases that end fatally in spite of surgical treatment continue to give a mortality to even that treatment.

DR. BARTON COOKE HIRST does not agree wholly with Dr. Norris concerning purging. He thinks it is brought about too slowly to be of great value in the worst cases, and in such cases he depends mainly on sweating. This, however, he thinks, is very imperfectly carried out in the average private house, and suggests that the double mortality of the private house cases compared with the hospital cases may be due to this imperfect method. An illustration was given in which a patient treated at home was given up to die by the attending physician, when sweating brought about by the apparatus used by Dr. Hirst in the hospital resulted in recovery. The patient must be put into a regularly arranged tent, a steady stream of live steam must be introduced under the tent and the treatment must be continued for thirty minutes, when literally quarts of fluid can be drained from the woman's blood vessels. The loss of fluid is replaced by normal salt solution, given midway between the sweats. The sweats should be given every four hours during the worst of the attack, but should be continued once or twice a day for several days.

Of special interest to Dr. Hirst in the treatment of eclampsia are the relative advantages of rapid delivery during pregnancy or labor and the conservative treatment. His feeling at the present time, after ample experience with both kinds of treatment, is that the conservative obstetric treatment of eclampsia gives the best results. An absolutely rigid rule, however, can not be followed. Cases are presented in which he deliberately resorts to accouchement forcé in spite of his prejudice against it; for example, a woman entering the hospital comatose and in convulsions, who fails to respond to the routine treatment, is subjected to accouchement forcé. He has seen some of these patients recover unexpectedly.

Veratrum viride has seemed to him the best drug in the treatment. Venesection has not worked well in his hands. If veratrum viride is indicated, he gives 15 minims of the fluid extract as a first dose, repeated in five minim doses as often as necessary to keep the pulse at 50 or 60. In twenty years he has seen but a single case of veratrum viride poisoning. The woman, however, was easily revived by digitalis, strong coffee and alcoholic stimulation.

DR. HOPKINSON has employed the Straganoff treatment in a large number of cases, and in eight consecutive cases it was successful except in the last.

DR. SWITHIN CHANDLER referred to the change of opinion concerning the use of morphia.

DR. WILLIAM R. NICHOLSON regards rapid delivery as the most important point. He cited a case which recently came under his care. The patient had been brought to the maternity after having had a dozen convulsions at her home. The mere placing of the hand on the abdomen caused convulsions. Eliminative treatment was instituted, but the convulsions remained. Under mild chloroform anesthesia the cervix was dilated without tearing and the child, which was dead, delivered by forceps. There were subsequently two convulsions, and within the next thirty-six hours the woman returned to consciousness. He would not go on record as believing this to be the proper treatment for a large number of cases. He does believe, however, that accouchement forcé is indicated in a certain limited number of cases after eliminative treatment has been instituted.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and First Annual Meeting, held in Albany, Jan. 28-30, 1907.

(*Continued from page 721.*)

Toxic Nephritis Dependent on Surgical Conditions.

DR. NATHAN JACOBSON, Syracuse, said that while the toxic agencies producing nephritis have been extensively studied, the surgical conditions that are capable of producing pathologic changes in the kidneys have not received so much attention. It is still an open question whether the presence of bacteria in the urine implies a diseased condition of these organs, or whether the bacteria can be eliminated without producing pathologic changes. The question has also arisen whether in this form of nephritis the provoking cause is the bacteria or the toxins produced by them. The author reviewed the experimental work that has been done in the endeavor to solve these questions and the conclusions thus far reached. It seemed that in cases of general infection the passage of bacteria through the kidneys produces various anatomic and pathologic changes in the kidney structure. Toxic nephritis

presents rather a favorable prognosis if the primary disturbance can be relieved. The author cited three cases. The first one was, presumably, a staphylococcic infection. The patient suffered from septic endocarditis as well as nephritis; in the second case, one of intestinal obstruction without septic disturbance of any kind but with complete arrest of intestinal function a very serious and all but fatal form of nephritis was awakened; the third case in which there was complicating gallstone disease, a subacute pancreatitis, and in consequence of the disturbance of the secretory function of this gland a toxic condition was aroused causing not only nephritis but also glycosuria. In each of the three cases after removal of the causal condition all evidence of renal disease disappeared. It is generally held that the presence of nephritis is to be regarded as a possible contraindication to surgical operation, but it seems that in a certain class of cases bacterial or toxic nephritis becomes rather a most positive indication for operation as by such a course only can the nephritis be removed.

Surgery of Foreign Bodies in the Respiratory Tract.

DR. WILLIS G. MACDONALD, Albany, said that a striking feature of foreign bodies aspirated is their size, as for instance a hatpin, 14 cm. long, having a head more than a centimeter in diameter, artificial tooth plates having as many as four teeth, and pieces of bone 2½ cm. long. The great size of bodies aspirated may in the absence of trustworthy evidence lead to serious errors in diagnosis. The general impression gained from literature corresponds to the author's experience that the normal plan of treatment of foreign bodies lodged in the deep trachea or bronchi is a preliminary inferior tracheotomy. If the body is mobile, a wide tracheal incision, left well open, will soon lead to expulsion through the violent efforts of coughing. If the body is fixed in the bronchus or the lower trachea, bronchoscopy, using a short tube, may be employed with precision. The mortality from the aspiration of foreign bodies has been materially decreased during recent years. This is due to the use of the Roentgen rays for diagnostic purposes, to the invention of mechanism for the direct inspection of the larynx, trachea and bronchi, and to the recent developments in technic.

Treatment of Diffuse Septic Peritonitis Following Appendicitis.

DR. RUSSELL S. FOWLER, Brooklyn, presented the following conclusions: 1. A small incision and the avoidance of evisceration. 2. Thorough cleansing of the primary focus of infection and removal of the appendix. 3. Evacuation and cleansing of all accessory abscess cavities and the pelvis before washing out the peritoneal cavity. 4. A rapid systematic flushing of the peritoneal cavity with hot saline solution. 5. The continuance of the saline flushing until the sutures are placed and for the most part tied. 6. The provision of proper drainage for the pelvis either by means of a large glass tube containing a capillary drainage strip emerging through the lower angle of the wound, or in females by a large caliber rubber tube filled with wicking passed through a posterior colpotomy incision. 7. The drainage of accessory abscess cavities with gauze or wicking. 8. The elevation of the head of the bed to accelerate the drainage of septic fluid into the pelvis, whence it can be removed through the tube, or in case of vaginal drainage find a ready exit. He said there are certain cases of diffuse septic peritonitis which may be closed safely without drainage. These are cases in which there are no necrotic areas and in which the serous covering of the intestine is not "blistered" or desquamated, or swollen and infiltrated. It is his firm conviction, however, that cases for complete closure should be selected carefully and this can only be done safely by an operator of wide experience. No more striking evidence can be adduced in support of drainage that the frequency with which secondary abscesses form.

Study of Blood Pressure.

DR. HENRY L. ELSNER, Syracuse, stated that the sphygmomanometer often gives information which is strongly suspected without it, but that conditions are unfolded by cautious blood pressure study which can not be made positive without it. It is not an uncommon experience to find that the sphygmomanometer leads to conclusions diametrically opposite to those reached without it. The author showed the importance of arterial tension for diagnostic and therapeutic purposes, and holds that the sphygmomanometer of to-day gives sufficiently accurate information of systolic, diastolic and pulse pressure to justify safe conclusions. Dr. Elsner considered the baneful results which follow chronic arterial hypertension unless the underlying process is controlled. Hypertension is usually a compensatory measure and it is often a mistake to give drugs which lower blood pressure without considering primary causes. Longevity depends on cardiovascular competence, and hypertension frequently exists in supposedly healthy individuals, especially in those who are strenuous and active, and its early recognition and control are of economic importance to the state. The author dealt with the differential diagnosis of hypertension and arteriosclerosis and on the importance of hypertension as evidence of renal change before the appearance of other symptoms. The foundation for all treatment in regulating and preventing hypertension is temperance and sobriety. The influence of the nitrites, chloral, iodids and other drugs is evanescent. The changes which follow in distant organs after the persistence of hypertension during long periods are many and far reaching.

The rapid development of arteriosclerosis in professional men is a depressing and alarming fact and worry is a causative factor in producing hypertension. Exophthalmic goiter is a disease of normal tension or hypertension and its persistence often leads to arteriosclerosis. Diabetes is also associated with hypertension. The importance of disturbance within the splanchnic vessels and gastrointestinal tract as factors in the production of hypertension and ultimate vascular change was discussed. In spite of high blood pressure, pulse pressure might be very low. This condition is a valuable indication for cardiac stimulation. The author considered the effect of filling the splanchnic vessels in the presence of pulmonary edema, and the use of nitroglycerin with adjuvants for this purpose was recommended in the presence of an insufficient heart with peripheral arterial obstruction associated with pulmonary edema. The author warned against one-sided reasoning in blood pressure study.

Classification of Blood Pressure Cases.

DR. LOUIS FAUGERES BISHOP, New York, said departures from normal blood pressure are classified into three principal classes—primary low arterial tension, high arterial tension, and secondary low tension. Certain special cases are described under constitutional low arterial tension. He subdivides the high pressure cases into those due to nervous causes and those due to other causes. Hypertonia vasorum idiopathica stands for a class of cases in which high arterial tension often exists but which evidently are not of nephritic origin, nor do they owe their origin to changes in the blood vessels. This group of cases is becoming more important than formerly because it is the first departure from health noticed in those who break down under the strain of modern life, mental tension being the cause of the increasing number of persons who suffer from this disorder of the circulation. The cure of this condition consists in regulating the functional activity of the brain, heart and blood vessels so that they shall run smoothly. Hygiene, exercise and diet play an important part in the treatment.

The Criminal Lunatic; His Status and Disposition.

DR. ROBERT B. LAMB, Matteawan State Hospital, dwelt on the present practice of dealing with the criminal lunatic in New York. The different forms of committments on criminal orders were discussed and certain defects in the present system were pointed out and remedies suggested. No legal cognizance is now taken in cases of diminished responsibility or constitutional inferiority, the old legal definition of insanity being the only interpretation usually permitted in the courts. He strongly condemned the custom of permitting lay juries to pass on the mental condition of criminal lunatics and of constituting commissions of lunacy with a medical minority. The bar as well as medical societies recognize the need of a betterment of present conditions.

(To be continued.)

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

MAINE Board of Registration in Medicine, Common Council Room, Portland, March 5. Secretary, Dr. W. J. Maybury, Saco.

MASSACHUSETTS Board of Registration in Medicine, Room 15, State House, Boston, March 12-13. Secretary, Dr. Edwin B. Harvey, Room 159, State House, Boston.

CONNECTICUT Medical Examining Board (Regular), City Hall, New Haven, March 12-13. Secretary, Dr. Charles A. Tuttle, New Haven.

CONNECTICUT Eclectic Medical Examining Committee, State Capitol Building, Hartford, March 12. Secretary, Dr. George A. Faber, Waterbury.

CONNECTICUT Homeopathic Medical Examining Committee, New Haven, March 12. Secretary, Dr. Edwin C. M. Hall, New Haven.

IOWA Board of Medical Examiners, Des Moines, March 19-21. Secretary, Dr. Louis A. Thomas, Des Moines.

OKLAHOMA Board of Medical Examiners, Guthrie, March 26-27. Secretary, Dr. J. W. Baker, Enid.

California December Report.—The State Board of Medical Examiners of California reports the written examination held at San Francisco, Dec. 18, 1906. The number of subjects examined in was 9; percentage required to pass, 75. The total number of candidates examined was 52, of whom 37 passed and 15 failed. The following colleges were represented:

PASSED.

College.	Year of graduation.	Anatomy.	Bacteriology.	Chemistry.	Materia Med.	Obstetrics.	Pathology.	Physiology.	Medicine.	Surgery.	General average.
Cooper Med. Coll.	1906	89	75	81	84	84	85	91	82	92	84.7
Cooper Med. Coll.	1905	87	77	77	96	78	63	80	84	91	81.4
Cooper. Med. Coll.	1906	85	68	75	82	69	60	79	76	86	75.5
Oakland Coll. of M. and S.	1906	83	85	60	73	90	68	71	75	94	77.6
University of California	1906	91	81	82	87	96	94	95	92	94	90.2
University of California	1906	86	77	94	87	96	85	100	79	95	88.7
University of California	1906	90	85	88	82	94	83	95	91	91	88.7
University of California	1906	82	75	82	80	89	75	93	75	91	82.3
University of California	1906	84	61	91	81	84	84	93	86	86	82.2
University of California	1906	88	78	88	85	88	70	78	70	86	81.2
University of California	1905	89	74	60	75	80	70	93	80	86	78.5
Univ. of Southern California	1906	81	70	67	85	84	64	66	80	86	75.6
Chicago Homeo. Med. Coll.	1889	75	79	87	88	88	75	82	84	84	81.3
Hering Med. Coll.	1903	78	65	67	90	72	60	78	90	85	76.1
Northwestern University	1903	80	86	68	73	94	70	64	75	87	77.4
Northwestern University	1904	88	82	76	82	94	84	93	73	91	83.6
Northwestern University	1905	89	80	77	91	97	80	96	80	90	86.6
Northwest. Univ. Woman's Medical School	1899	85	79	75	81	93	67	75	62	81	77.5
University of Kansas	1892	86	76	73	87	96	68	93	75	95	83.2
Hosp. Coll. of M., Louisville	1894	81	83	62	84	89	65	66	60	87	75.2
Kentucky School of Med.	1906	79	68	76	82	84	61	85	82	87	78.2
Johns Hopkins Med. School.	1906	88	72	76	76	82	76	90	80	80	80
Harvard Med. School	1887	80	77	75	86	76	79	90	79	92	81.5
Harvard Med. School	1901	89	81	92	88	88	85	93	75	95	87.3
Harvard Med. School	1901	90	73	79	83	82	75	90	81	94	81.8
Coll. of P. & S., New York	1903	88	80	86	84	85	80	85	95	90	85.8
Medical Coll. of Ohio	1896	93	89	79	80	90	93	96	83	90	88
Medical Coll. of Ohio	1897	90	74	85	88	78	71	62	97	87	81.3
University of Pennsylvania	1897	90	84	73	92	97	87	80	83	91	86.1
Jefferson Med. Coll.	1879	95	89	76	90	89	80	85	85	94	87
Jefferson Med. Coll.	1892	75	75	76	77	69	73	68	85	80	75.3
Woman's Med. Coll., Penn.	1903	88	77	76	73	77	72	78	81	92	79.3
McGill University, Montreal.	1903	91	74	77	80	76	81	95	95	83	83.5
University of Virginia	1891	90	81	66	83	64	70	83	80	85	78
R. C. S. Eng., R. C. P. Lond.*	1900	90	67	87	88	96	81	88	77	87	84.5
Royal Univ., Turin, Italy	1905	87	68	70	81	71	90	61	72	75	75
Univ. of Würzburg, Germany	1903	86	67	69	78	63	75	90	67	83	75.3

FAILED.

Coll. of P. & S., San Fran.	1906	80	66	51	79	55	53	66	68	82	66.6
Univ. of Southern California	1905	79	68	71	79	84	76	66	40	79	71.2
Am. Coll. of M. & S., Chicago	1906	78	62	43	77	71	60	51	80	82	67.1
Denver & Gross Coll. of Med.	1895	75	58	62	72	70	47	70	45	80	64.2
Coll. of P. & S., Chicago	1893	50	42	38	72	60	53	36	76	71	55.2
Coll. of P. & S., Chicago	1898	79	80	75	78	89	50	64	49	76	71.
Coll. of P. & S., Chicago	1905	75	64	69	75	88	60	74	60	86	72.2
Coll. of P. & S., Keokuk, Ia.	1896	80	64	47	85	68	60	60	77	79	68.8
University of Louisville	1905	68	63	56	79	77	63	48	50	79	64.7
University of Michigan	1886	79	63	..	83	75	60	58	52	70	60
Cincinnati Coll. of M. & S.	1875	70	41	56	82	72	70	31	30	73	62.7
Medical Coll. of Ohio	1882	52	54	60	74	67	35	51	32	53	53.1
University of Tennessee	1888	75	51	50	82	73	41	75	60	54	62.3
Queen's University, Ontario.	1888	62	56	50	63	75	55	49	26	78	55.1
Chiba M. C., Tokio, Japan.	1892	65	48	54	84	65	35	29	42	79	55.2

* Not a medical school but the Examining Board in England composed of the Royal College of Physicians of London and the Royal College of Surgeons of England.

The following questions were asked:

CHEMISTRY AND TOXICOLOGY.

1. Write a prescription for the administration through the mouth of chlorin gas dissolved in water. 2. Mention the sources and uses of benzin. 3. Describe the theory of construction of the metric system. 4. Name the chemical elements which enter into the formation of bone. On what does the hardness of bone depend? 5. What is the cause of lactic acid in the stomach and how can it be separated from hydrochloric acid? 6. Describe in detail a reliable method for determining the quantity of sugar in diabetic urine. 7. Give the maximum doses of the following: (a) Acetanilid. (b) Atropin sulph. (c) Beechwood creosote. (d) Bichlorid of mercury. (e) Extract cannabis indica. 8. Name the ingredients of the following: (a) Compound chalk powder. (b) Dover's powder. (c) Compound licorice powder. (d) Carron oil. (e) Blackwash. 9. Give chemical tests for detection in solutions of the following salts: (a) Silver nitrate. (b) Lead acetate. (c) Ammonium chlorid. (d) Ferric chlorid. (e) Corrosive sublimate. 10. State the significance of the presence in drinking water of (a) nitrates and nitrites, (b) excess of albuminoid ammonia, (c) excess of chlorin.

BACTERIOLOGY.

1. Give the classification of bacteria and name an example of each division. 2. Define ærobic, anærobic; differentiate facultative ærobins and facultative anærobins. 3. State method of sterilizing the following: Fluid culture media, test tubes, rubber stoppers, rubber gloves. 4. Define the following terms: Germicide, antiseptic, aseptic, sterile, disinfectant. 5. Define immunity. What do you understand by natural, acquired and inherited immunity? 6. To what requirements must bacteria conform to be considered the cause of disease? 7. Briefly describe the Widal reaction, state its diagnostic significance. 8. What do you understand by the terms factor and unit, as applied to antidiphthertic serum? Give the origin, morphology, properties and growths, *Bacillus tuberculosis, Bacillus anthracis, Bacillus edematis maligni.* What is understood by the terms, trichobacteria, leptothrix, sarcina?

ANATOMY.

1. Describe and locate the appendix vermiformis. 2. Describe, generally and briefly, the lymphatic system. 3. Trace the arterial blood from the heart to the foot. 4. Describe the palmar arch. 5. Describe the knee joint. 6. Locate and describe the stomach. 7. Locate the liver, spleen, pancreas and kidneys. 8. Give the position and relations of the tricuspid and mitral valves of the heart. 9. Describe and name the muscles of the female perineum. 10. Describe the sympathetic nerve, naming and locating the principal ganglia.

PATHOLOGY.

1. Describe amyloid degeneration, and state in what cases and in what organs it is found. 2. Classify and describe briefly the cysts of the kidney. 3. Enumerate in the order of frequency the tumors of the parotid glands. 4. What diseases of the mother may be transmitted to the fetus? 5. Classify and describe abscesses of the liver. 6. Give the sites and the pathology of varicose veins. 7. Describe the causative agent and the production of the lesions of scabies. 8. Examination of gross pathologic specimens. 9. Examination of microscopic specimens (histology); 1 slide. 10. Examination of microscopic specimens (pathology); 1 slide.

OBSTETRICS.

1. Give the signs of pregnancy. 2. What is hyperemesis? Give the symptoms, course, and treatment. 3. Name the varieties of placenta prævia. 4. Under what conditions should a pregnancy be interrupted? 5. What effect does maternal syphilis have on the child? 6. What changes take place in the circulation at birth? 7. What are the causes of rupture of the uterus? 8. Describe the management of labor in breech presentations. 9. What is episiotomy? Under what conditions and how is it performed? 10. Describe the treatment for a complete perineal laceration.

HOMEOPATHIC MATERIA MEDICA.

1. What homeopathic medicines are most frequently indicated in threatened abortion? Give characteristic symptoms of two. 2. Give symptomatology of china and nux vomica in icterus. 3. Give the indications for cantharis, mercurius cor. and terebinth in nephritis. 4. Give differentiating symptoms of arsenicum and apis in dropsy. 5. Give differentiating symptoms of mercurus cor., veratrum alb. and nux vomica in ailments of the intestinal tract. 6. Give four prominent objective symptoms of belladonna 7. Where patient has "taken cold" give symptoms characterizing aconite and gelsemium. 8. Differentiate bryonia and rhus tox in rheumatism. 9. In teething children with "summer complaint," give characteristic objective symptoms of arsenicum, antimonium crud. and chamomilla. 10. Give three symptoms of digitalis, cactus grand and aconite which would lead you to select either in preference to the others in heart trouble.

EXAMINATION IN SURGERY.

1. Give dressing and position of forearm in fracture of olecranon process. 2. Give management of case of multiple fracture of inferior maxilla. 3. Describe manipulation for reduction of backward dislocation of femur (on dorsum ilii). 4. Describe two methods of surgical procedure in pleural empyema. 5. Describe a recognized method of prostatectomy. 6. What are the indications for resection of head of humerus. 7. Give treatment of prolapsus ani. 8. Diagnosis of aneurism of aorta. 9. Diagnosis of malignant stenosis of pylorus. 10. Mention various causes and clinical features of spinal curvature.

HOMEOPATHIC MEDICINE.

1. Diagnose syphilis in first, second and third stages. Give treatment. 2. Where can you best hear the various heart sounds? How would you recognize mitral insufficiency? 3. Diagnose typhoid fever and prescribe for the diarrhea. 4. How would you recognize perforation of the intestine in typhoid fever, and what treatment would be indicated? 5. Diagnose and give treatment for angina pectoris. 6. Name some of the causes of retention of urine. How would you recognize same, and what treatment would you apply?

7. What are the most common complications of measles and of scarlet fever? 8. How would you recognize and treat acute peritonitis? 9. Describe your treatment in a case of undeveloped scarlatina. 10. Give the symptoms, treatment and prognosis of cirrhosis of the liver.

PHYSIOLOGY.

1. Name the enzymes concerned in the various phases of digestion. 2. Give the histology of skeletal muscle tissue. 3. Describe and give the function of the red blood corpuscles. 4. Explain the neuron doctrine. 5. Write a detailed description of the function of the seventh cranial nerve. 6. What is the effect of severing (a) the anterior root of a spinal nerve, (b) the posterior root? 7. Distinguish between the paralyses caused by a lesion of the internal capsule and a lesion of the anterior horn cells of the spinal cord, in the following particulars: (a) reflexes, (b) nutrition of muscles, (c) electrical reactions of muscles. (8) Discuss briefly the physiology of the liver. 9. (a) Describe the components of human semen. (b) In what part of the female genital tract does fertilization occur? 10. Define (a) autolysis, (b) emmetropia, (c) diopter, (d) ontogeny, (e) macula lutea, (f) aphasia, (g) suprarenalin, (h) urea, (i) zymogen, (j) osmosis.

MEDICAL.

1. What are the essential differences in the blood picture between a typical primary and a typical secondary anemia? 2. What are the signs, clinical and laboratory, of a well-established chronic interstitial nephritis? 3. Give the symptoms and physical signs of chronic lead poisoning. 4. By what physical signs do you recognize hydropneumothorax? 5. How would you treat a case of diphtheria involving the larynx? 6. Enumerate the causes of hematuria. Differentiate between renal and extra-renal blood in the urine. 7. What are the immediate indications for treatment in intestinal hemorrhage complicating typhoid fever? 8. Give symptoms of fibrinous pericarditis. 9. Name the physical signs and clinical symptoms which would lead to the suspicion of lung abscess coming on as a sequel of pneumonia. 10. Discuss the data on which you might base a diagnosis of tuberculosis of the lung.

MATERIA MEDICA AND THERAPEUTICS.

Select ten of the following drugs. Regarding each of the ten state: (a) Adult dose. (b) Therapeutic use. (c) Symptoms produced by an overdose. Write the name of the drug at the beginning of the answer which applies to it: 1. Tartar emetic. 2. Nitrate of silver. 3. Salicylate of bismuth. 4. Sulphid of calcium. 5. Camphor. 6. Sulphate of Codein. 7. Arsenite of copper. 8. Tinct. chlorid of iron. 9. Tinct. gelsemium. 10. Guaiacol. 11. Corrosive sublimate. 12. Veratrum viride. 13. Chlorate of potassium. 14. Hexamethylenamin. 15. Nitroglycerin.

Missouri November Report.—Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the written examination held at Kansas City, November 26-28, 1906. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 69 of whom 34 passed and 35 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
American Coll. of Med. and Surg., Chicago	(1906)	75
Rush Med. Coll.	(1905)	81, 84
College of P. and S., Chicago	(1902)	75
Johns Hopkins Med. School	(1904)	79
St. Louis University	(1906)	75, 75, 75, 75
Barnes Med. Coll., St. Louis	(1895) 75; (1906)	75, 75, 75
St. Louis College of P. and S.	(1906)	75
University of Pennsylvania	(1905)	84
Meharry Med. Coll.	(1906)	75, 75
Vanderbilt University	(1906)	77
McGill University, Quebec	(1895)	75
University Medical School, Dublin	(1906)	78

Undergraduates, the grade of 75 was reached by six, 76 by one, 77 by two, 78 by two, 80 by two and 85 by one.

FAILED.

Keokuk Med. Coll., College of P. and S.	(1906)	68, 69
Physio-Medico Coll. of Indiana	(1900)	63
Louisville Med. Coll	(1899)	47
Kentucky School of Med.	(1894)	48
St. Louis University	(1906)	64, 68, 68, 69
Ensworth Central Med. Coll.	(1906)	55
Barnes Med. Coll.	(1905) 63; (1906)	56, 57, 61, 69
St. Louis Coll. of P. and S.	(1905) 59, 66; (1906)	56, 67
University Med. Coll., Kansas City	(1906)	63
Eclectic Med. University, St. Louis	(1906)	56, 56
Washington University, St. Louis	(1906)	69
Meharry Med. Coll.	(1906)	63, 64
Undergraduates		57, 58, 60, 63, 64, 66, 67, 68, 68, 69

Oklahoma December Report.—Dr. J. W. Baker, secretary of the Territorial Board of Medical Examiners, reports the written examination held at Guthrie, Dec. 26-27, 1906. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 66.2. The total number of candidates examined was 23, of whom 22 passed and 1 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Northwestern University, Chicago	(1905)	88.2
American Med. Miss. Coll.	(1901)	87
College of P. & S., Keokuk	(1878) 83; (1906)	68
University of Kansas	(1906)	79
Kentucky School of Med.	(1892)	69.2
University of Louisville	(1876)	70
University of Maryland	(1906)	88.5
Boston University	(1906)	70.2
St. Louis Univ. (Marion-Sims-Beaumont Med. Coll.)	(1896)	82
Washington University, St. Louis	(1906)	87
Missouri Med. Coll.	(1881)	93.6
Cleveland Coll. of P. & S.	(1906)	73.2
Eclectic Med. Inst., Cincinnati	(1889)	78
Jefferson Med. Coll.	(1906)	69
Coll. of P. & S., Dallas	(1905)	71
Memphis Hosp. Med Coll.	(1887) 69; (1900) 83; (1902)	71.5
University of Texas	(1906)	71
Chattanooga Med. Coll.	(1903)	86
McGill University, Quebec	(1893)	91

FAILED.

Missouri Med. Coll.	(1890)	54

The following questions were asked:

CHEMISTRY AND URINALYSIS.

1. Define (a) chemistry, (b) matter, (c) atom, (d) molecule, (e) element. 2. Differentiate between chemical and physical changes in matter and illustrate. 3. Define chemism, atomic weight, specific gravity. 4. Name the alkaline elements; give symbols for the gaseous elements. 5. Names two -ic and two -ous salts of mercury and give formulas. 6. Give common name, formula, and uses of four zinc salts. 7. Give common names of following formula: $CO_2H_2O_2$, $FeSO_4$, NACL, $HGCl_2$. 8. Give chemical name and formula of borax, marble, blue vitriol, rochelle salts, oil of vitriol. 9. Discuss arsenic, mention its properties, compounds and uses. 10. Name four normal and give in detail tests for four abnormal constituents of urine.

OBSTETRICS AND GYNECOLOGY.

1. Define menstruation, give duration, age of appearance and cessation, and abnormal manifestations. 2. Name and give measurements of female pelvis; of fetal head. 3. Give briefly the anatomy of uterus, ovaries, placenta. 4. Give theory of menstruation; of conception. 5. Name the three important forms of hemorrhage met in obstetric practice and give causes and treatment of each. 6. Define ectopic gestation, caput succedaneum, vitellus, amnion. 7. Into what stages is labor divided, and where does each stage begin and end? 8. How would you treat mastitis, puerperal eclampsia? 9. Give in detail technic of repairing laceration of perineum involving floor of vagina. 10. How would you prepare your patient for delivery and yourself for attendance in a case of labor?

MATERIA MEDICA AND THERAPEUTICS.

1. Give therapeutics of quinin, iron, strychnin, digitalis. 2. Give dosage of remedies you use in pneumonia, membranous croup, typhoid fever. 3. Give dosage and indications for four remedies you use in jaundice, rheumatism, malaria. 4. Give habitat, preparation, dosage and uses of twelve leading remedies you carry in your medicine case. 5. Give indications that guide you in the use of each of the remedies you mention in answer to previous question.

PHYSICAL DIAGNOSIS AND PATHOLOGY.

1. Name the topographic lines of the thorax, outline and locate the heart's area of absolute dulness and the upper border of the normal liver. 2. Describe the usual course of parenchymatous nephritis, also interstitial nephritis. In what class of patients is the latter most frequently observed? How would you differentiate one from the other? 3. Under what conditions would occur a physiologic leucocytosis? Under what pathologic conditions would you expect to find a polymorphonuclear leucocytosis? A lymphocytosis? 4. Designate which component part of the spinal cord is involved in locomotor ataxia and describe the metamorphosis of structure characterizing the pathologic process. 5. What pathologic changes occur in cirrhosis of the liver? 6. Give differential diagnosis between septicemia and pyemia. 7. Give the principal diagnostic points of difference between mitral regurgitation and aortic regurgitation. 8. Give differential diagnosis between scarlet fever and erysipelas in their early stages. 9. Give differential diagnosis between phlebitis and lymphangitis. 10. Give differential diagnosis between variola and varicella.

MEDICAL JURISPRUDENCE.

1. In a medicolegal sense, what constitutes a dying declaration and what is necessary to make it evidence in a court of justice, and how should it be taken? 2. Determine in a case of supposed infanticide whether the child was stillborn or killed after birth. 3. What are the symptoms and treatment of corrosive sublimate poisoning? 4. At what period will a body float after being drowned? 5. In a case of opium poisoning, what are the postmortem symptoms? 6. What is malpractice? 7. How would you treat a patient suffering from poisoning by coal gas? 8. What are symptoms and treatment for poisoning by the castor bean and what is considered a lethal dose? 9. What are symptoms of poisoning by wood alcohol and treatment for same? 10. Give symptoms and treatment for poisoning by turpentine taken internally.

PRACTICE OF MEDICINE.

1. What are the intrinsic and extrinsic causes of dilatation of the heart with broken compensation? How would you treat the latter condition when very extreme? 2. Describe Bell's paralysis, Cheyne-Stokes respiration. 3. What are the early manifestations of pulmonary tuberculosis, and give your method of management in a case? 4. Give the etiology, pathology, symptoms, treatment, dietetic, medicinal, hygienic and prophylactic of enterocolitis. 5. Give symptoms and treatment of acute ptomain poisoning. 6. Give symptoms and treatment of pulmonary edema. 7. Give cause, symptoms and treatment of herpes zoster. 8. Name one infectious and contagious disease and give diagnosis of the diseases named. 9. Describe a case of uremic coma and your treatment for same. 10. Give symptoms and diagnosis and treatment of follicular tonsillitis.

ANATOMY.

1. Describe the femur, its articulations and state what portions of it are not covered by periosteum. 2. Give the number of sutures and fontanelles in the skull. By what and how is each formed? 3. Where is the recticular elastic cartilage found? Locate the coracoid and acromion process. 4. Give origin, insertion and uses of the following muscles: Trapezius, supinator longus, latissimus dorsi, internal oblique and gracilis. 5. Describe the right ventricle

of the heart, give its capacity and name the valves connected with the ventricle. 6 and 7. Locate and give uses of the Fallopian and Eustachian tubes, lachrymal duct, prostate gland, crystalline lens, antrum of Highmore, clitoris, spleen, ureter, suprarenal capsule, the abdominal and thoracic cavities. 8. Give origin and branches of inferior dental and the mastoid arteries. 9. Name the bones, main muscles, arteries, nerves and other fascia gone through in amputating leg at the thigh. 10. Enumerate the changes the bones of the lower jaw undergo in very aged persons.

PHYSIOLOGY.

1. Define special and comparative physiology. 2. Name the digestive juices and the organs that produce them, and give their actions on bread, eggs, milk and butter. 3. Name the ferments found in the digestive juices and give source of glycogen and dextrose. 4. Give the composition of normal and healthy urine, and of urine in a case of diabetes mellitus. 5. Give structure and functions of the liver and kidneys. 6. Where and how is urea formed? Give cause of rigor mortis. 7. How do the products of digestion find their way into the blood? 8. What would be the results of eating in excess of albuminous, oleaginous and farinaccous foods? 9. Give the changes of the air in respiration and the respiratory changes in the blood. 10. Name the heat-producing tissues of the body.

SURGERY.

1. Diagnose, give prognosis and treatment of the following diseases: Erysipelas, rhinitis, pyemia and traumatic or surgical fever. 2. Describe and differentiate the following: Concussion and contusion, incised, punctured, lacerated gunshot and poisoned wounds. 3. Give signs of fracture, dislocation, reduction and the process of repair. 4 and 5. Give differential diagnosis and treatment of fracture of the surgical neck, capsular fracture of the femur, and a case of hip-joint disease. 6. Define and give treatment of tinea versicolor, tinea circinata, herpes zoster and scabies. 7. How would you diagnose? Give prognosis and treatment of septicemia, pyemia and septicopyemia. 8. Give differential diagnosis between coma, the result of an injury and that produced by opium poisoning, alcoholic intoxication, apoplexy and uremic poisoning. 9. Describe and give treatment of hydrocele, hypospadias, varicocele, hematocele and epispadias. 10. Give symptoms, prognosis and technic of the operation for ectopic gestation, or an extrauterine pregnancy.

Discussions

SURGERY OF HARELIP.

(*Continued from page 759.*)

DISCUSSION.

DR. THOMAS FILLEBROWN, Boston, said that while his long association with Dr. Brown has proved the general harmony of their views, there are some points on which his personal experience differs from Dr. Brown's. Dr. Fillebrown fully agreed that the closure of the fissures of the palate would be done better by easy stages, and said that he considers it entirely unreasonable to attempt to close both fissures at the same operation. If the fissure in the palate is narrow, both hard and soft palate may be united in one operation. But if it is wide, Dr. Fillebrown thinks that only the hard palate should be attempted at the first operation. In all cases the cleft of the palate should be operated on first. There is much more room to work and the intermaxillary can then be much more perfectly adjusted. The soft palate can well be closed later. Dr. Fillebrown has done the Brophy operation a number of times and has never had stenosis result and has not disturbed the teeth germs when doing it properly, nor has the articulation been much disarranged. He has followed with much satisfaction a hint from Dr. Gilmer and only approximated the parts at the first operation, so that the closure can be easily completed by a flap operation a few weeks later. He does not fear collapse and remembers but one patient who showed any particular depression or had temperature over 102 F. after the operation. The strapping of the face of the infant appeals to him and he said that he certainly shall adopt it. His patients do not suffer from after effects of anesthesia, as his method of administering the anesthetic is such that the patient comes out of it all right with a good appetite and digestion. He does not recall a case in which it seemed that the anesthesia caused any serious depression. His method, a modification of the Junker system, is giving simply etherized air. He does not produce very deep anesthesia, nor does he allow the patient to become so conscious as to suffer from the shock of the operation. He believes in early operations for deformities of the mouth and lips, that is, if the child is normally well during the first few weeks of life.

DR. M. I. SCHAMBERG, Philadelphia, said that Dr. Brown properly called attention to the fact that young infants are particularly susceptible to shock, in spite of advocating early operation. He believes with Dr. Brown that the proper course to pursue is to draw the parts gradually together, to assist the face in reaching its natural conformation prior to the performance of the operation; and while his experience in this work has not been anything compared to that of Drs. Brown and Fillebrown, he believes from observation that the best results can be obtained in this way.

DR. M. H. FLETCHER, Cincinnati, said that his experience in this kind of work has only magnified his ideas of the difficulties always present in performing such operations, and while it has not been his pleasure to see Drs. Brown and Fillebrown operate, he is sure that their methods must be a great advance over the old ones.

DR. E. S. TALBOT, Chicago, said that the pictures shown by Professor Kingsley illustrated beautifully the evolution of the jaws from fish to reptile, and from bird to mammal. From conception, the infant passes through all these evolutionary stages. The fact that when a child is born it has cleft palate is evidence that the child is a degenerate and has an unstable nervous system. In passing through the different phases of evolution, arrest of development takes place in the palate, and often in other parts of the body, demonstrating that the child has an unstable nervous system. The question naturally arises as to whether the operation should be performed early or late. At time of birth, and the eruption of the first set of teeth, the child is undergoing what is known now in modern pathology as the "second period of stress," in which some tissues are developing and others are passing. The tissues that are developing are along the line of the alimentary canal, including the face, jaws and teeth. From his research work, it seems to Dr. Talbot that this is a very serious point. The greatest care should be taken not only to prevent shock to the nervous system, but also to take particular cognizance of the bacteria which form in the mouth. These points in modern pathology must be considered in the operation. It is simply a matter of time, of recording cases, and summing up after some 200 or 500 operations have been performed, to decide whether an early operation is the proper thing, or whether operation should be performed later in the life of the child. Of course, other things must be considered, such as the hygiene and the nurse.

DR. GEORGE V. I. BROWN, Milwaukee, Wis., said that he wished to explain what evidently had not been made clear by the paper. The central idea intended to be conveyed, was that there can not be a perfect lip without a reasonably perfect nose; there can not be perfect speech unless these organs are perfect also. The laws of Nature can not be transgressed by violent operative procedures on infants, so far as the maxillary bones are concerned, without injury to one and all of these associated parts. Sections of the embryo at five or six weeks, and sections showing the dental follicle in various stages will end in understanding the relation of the parts. Never, said Dr. Brown, let a poor mother see a new-born child without the strips on its face, if possible to avoid so doing. It is an unnecessary shock. In the course of a few weeks these strips will have worked wonders by drawing the asymmetrical parts into relations much better than any surgeon can do it by forcible means.

SURGERY OF NERVES.

(*Continued from page 774.*)

DISCUSSION.

ON PAPERS OF DRS. TAYLOR*, POWERS AND MURPHY.

MR. CHARLES BALLANCE, London, Eng., has found that the neurilemma cell is the chief factor in the regeneration of the peripheral nerves, and that without this cell the fibers in the nervous system are unable to regenerate, hence it comes that, as we have not that little cell in the spinal cord, it is impossible, as far as we can see at present, that suture of the spinal cord can be of any service whatever. The neurilemma does not enter the spinal cord with the anterior root nerves, although there

* Dr. Alfred S. Taylor's illustrated article on "Brachial Palsy" appeared in THE JOURNAL, Jan. 12, 1907.

are some of the nerves of the posterior root which have some neurilemma as they enter the spinal cord. How far that extends and to what extent it is possible to get a recovery of sensation after division of the spinal cord Mr. Ballance can not say. That is a subject which has not yet been worked out.

This research with regard to the regeneration of the nerves has an important bearing on Dr. Taylor's paper. In 1895 Mr. Ballance sutured the facial nerve to the spinal accessory. That patient disappeared for a while and it was not until five years afterward that the results could be noted. In that case there was complete recovery of the face, but no dissociated movement with the shoulder. Mr. Ballance has done a number of operations of facio-accessory anastomosis since then, and in some of these cases there has been subsequently dissociated movement, while in others it has never occurred. In one of his brother's cases dissociated movement did not commence until three years after the operation, so that even when it does not occur early we need not despair. It is obvious, of course, from the anatomic relation of the cortex, and from the relations of the centers in the medulla, that the operation which ought to be done is either a facio-hypoglossal anastomosis or a glosso-pharyngeal anastomosis. Professor Shafer said that the best nerve to use is the glosso-pharyngeal, but Mr. Ballance came to the conclusion, as the result of the conditions he had studied on the cadaver, that the operation was so difficult that he would not attempt it. Mr. Ballance said that this splendid series of cases illustrates very well the results of these operations. The best class of cases of facial palsy to operate on is not the class of cases which occur before or after operations on the mastoid. Of course, sometimes the conditions existing in the mastoid influence the facial canal and so produce facial palsy, but in those cases there is no doubt but that in some there is a pyogenic neuritis which afterward interferes with a good recovery when a nerve anastomis is done. The best type of cases for this operation is represented by cases of fracture of the base of the skull in which facial palsy occurs, and the palsy is permanent. Here there is no sepsis and a perfect field of operation, and in these cases the best results are obtained.

The operation which Mr. Ballance has done is not an end-to-side anastomosis, but an end-to-end anastomosis. He does not think that the individual who has a divided hypoglossal nerve suffers very much discomfort. He referred to a case of punctured wound of the neck in which the only serious injury was a division of the hypoglossal nerve. In that patient the tongue became atrophied on one side, but the patient did not suffer any discomfort. It is so important in a facial palsy case to get a good result, that for the present, at least, he will not consider the question of the tongue and throw the whole of the hypoglossal nerve into the end of the paralyzed facial. It is not a good thing sometimes, he said, to try to do too much, and in this operation he has found that whether a facio-accessory anastomosis or a facio-hypoglossal anastomosis is done, the best plan is to do an end-to-end junction. With the facio-accessory anastomosis, if an end-to-end junction can be done, it is easy to unite the distal end of the divided spinal accessory with one of the cervical nerves in the neck that will give regeneration and not a permanent loss of power in the sternomastoid and the trapezius.

With regard to the distal end of the hypoglossal, Dr. Ballance would advise the same procedure. On four or five occasions he has united the distal end of the hypoglossal to the gustatory. These cases are too recent, however, to report what the result will be, but at any rate, when the attempt is made, especially in women, to give relief from this terrible deformity of facial paralysis, the best plan is to throw over all thought about the tongue and the sternomastoid, and to throw the whole hypoglossal and spinal accessory into the facial. Think of that condition at first, and then afterward anastomose the divided nerve with some other nerve in the immediate neighborhood. In that way regeneration of the tongue or sternomastoid will take place some months afterward and without any deformity.

DR. HARVEY CUSHING, Baltimore, said that experimental physiologists have devoted a great deal of attention of late to the part that is played in regeneration by the peripheral and the central segment, and they believe that the peripheral portion of a nerve has the power to regenerate itself *in toto*. Much of this is against the doctrine of the neurone as a nerve-cell unit. It is undoubted, he said, that in the peripheral segment there occurs, after division, a multiplication of the sheath of Schwann cells; that is, the cells proliferate, and the process is undoubtedly regenerative in character, but in the opinion of many the entire restoration of the peripheral segment can never take place without some central connections, whether they come from axones wandering out of the central ends of the same nerve, or from axones which have straggled in from the central ends of other nerves which have been divided in the approach through the tissues before the nerve under study has been reached. It is Langley's view that the latter accounts for the finding by Bethe of the few anatomically perfect fibers in the peripheral segment of nerves with no apparent central connection. In order to get a functional return there must be a connection with the central cell. It is probable that the complete functional regeneration depends on a double process. It seems that these proliferating cells of the sheath of Schwann play some part in drawing down the central axone, possibly through a chemiotactic influence. Some experiments show this attraction very distinctly. If, for example, the central end of a divided nerve is conducted into a tube or quill buried in the tissues, the down-growing axone will pass through the tube into the tissues beyond. If, however, the peripheral segment, instead of being left in the tissues, is brought up and inserted with the central end in the tube, the nerve fibers will start to grow down, but will return in the tube and find their way into the end of the peripheral segment. This shows that there is some influence at work, possibly akin to that mysterious force which attracts the leucocytes to a certain point of the body. The sheath of Schwann cells have been shown to have "wandering" propensities, and the axones probably do likewise under some chemical influence which draws them back to their original destination. In spite of the fact that this influence or attraction is constantly at work, anything that will prevent the central axone from growing down into the peripheral will prevent the establishment of a communication which under ordinary circumstances will surely be made. Herein lies the importance of this matter from a surgical point of view.

It is a most important thing, Dr. Cushing said, to prevent the intervention of a scar or the interposition of tissue between divided nerve ends. In the endeavor to bring the divided nerves together by means of sutures, union is often complicated through the presence of a foreign body which adds to the scar formation and prevents a complete functional reunion between periphery and center. Practically every incision made through any tissue divides nerves. With perfect healing and perfect tissue approximation the nerves unassisted will reunite. There are operations, however, after which, through methods of closure, this auto-reunion is impossible, and in these operations it is most desirable to avoid injury or division of the nerves. Emphasis is laid only on the importance of correct apposition of the muscles, fasciæ, etc. If the nerves to these muscles are not handled carefully, or if they are divided, there will be an atrophy of these very muscles, on whose strength depends the strength of the wound. Therefore, it is wise in all operations to bear in mind the presence of nerves, and to save them, if possible. If the nerves must be divided, and if the tissues are subsequently approximated with accuracy, and heal without much scar formation, the chemiotactic principle will tend to draw down the central axon to its periphery again. All that is necessary is to see that the nerves are brought into careful apposition. Except for large nerves, sutures are unnecessary and often undesirable.

DR. W. W. KEEN, Philadelphia, recorded three failures from the physiologic and surgical point of view. He has three times attempted to anastomose the facial nerve with other nerves. First, with the spinal accessory, in the case of a lady who had had a facial palsy dating from childhood and due to an uncertain cause. In that case he was utterly unable to find any facial nerve remaining. He dissected completely down to the bone but failed to find any nerve. The palsy had existed some twenty-five years. In the second instance he operated on a young man who had had a bullet wound of the facial nerve which had destroyed it entirely. Dr. Keen anastomosed the

nerve with the spinal accessory, splitting the latter and using only that portion of the nerve which went to the trapezius and not that going to the sternomastoid. The third case he anastomosed with the hypoglossal. Both were end-to-end anastomoses. Both of these patients had agreed to submit to later treatment, but they disappeared as soon as they left the hospital. One of them was seen about two months after the operation and with absolutely no benefit at all, as was to be expected when postoperative treatment was neglected.*

DR. JOHN B. ROBERTS, Philadelphia, reported two cases he saw recently, one of which was an ischemic paralysis. The first patient, a young man of 17, with very bad contraction of the hand and atrophy of the forearm muscles, was treated for a fracture in the neighborhood of the lower end of the humerus. Dr. Roberts has been able to obtain some relief of the contracture by lengthening the radial flexor of the wrist and transplanting the long palmar muscle from the flexor surface to the posterior region and attaching it to the ulnar side of the carpus and metacarpus. The other patient, a young woman, aged 20, had had a somewhat similar condition cured many years ago by tight bandaging for fracture of the forearm. In her case so much had happened since in the way of operation and various attempts at relief that up to the present time nothing has been done.

DR. LEONARD FREEMAN, Denver, referring to Dr. Powers' paper, did not think that these cases are as rare as has been supposed. He has seen five in the last two years. Two of the patients he lost sight of; three are still under observation. One of the five cases occurred in the lower extremity; four in the upper. All the patients were children who fell and fractured the bones. In two of the cases gangrene of the skin was present, showing the great pressure with which the splints had been applied. In one of the cases massage was instituted and was carried out faithfully for about twelve months. This patient had very indurated muscles, with the fingers rather contracted, and there was numbness and loss of sensation in the thumb and little finger of one hand. All these symptoms disappeared in great part during the twelve months. The muscles softened up and the fingers regained much of their flexibility and sensation. In one other case the sensation was not only lost in the hand and the fingers contracted, but many trophic changes had occurred in the skin with a tendency to ulceration of the fingers. It seemed wise in this case to dissect down on the ulnar and radial nerves and remove them from the cicatricial muscular tissue to a place beneath the skin, which was done easily and gave immediate relief. Sensation returned rapidly and the ulcerations disappeared from the skin and hand. Under the influence of massage the patient recovered almost, if not completely. The fingers straightened out and the patient could use his hand with perfect ease. These are the only cases presenting definite results.

The best treatment, he said, would seem to be first to try massage, and if sensation does not return, the fingers straighten out, and the trophic disturbances disappear within a reasonable time, then cut down on the nerves and liberate them, bringing them up beneath the skin so as to relieve pressure and lengthen or transplant the tendons as may be indicated.

DR. A. J. OCHSNER, Chicago, pointed out that in order to secure peripheral regeneration of nerves one must establish conditions favorable for the actual communication between the axis cylinders above and the axis cylinders below. In cases that come to the operation late this is only possible by securing a clean, straight cross section above so that the axis cylinders project, and by securing the same conditions below so that there also the axis cylinders project. Then, to favor the union between the two surfaces, one must, above all things, avoid tension. It matters very little, within reasonable bounds, how far distant the two ends may be. He has united many of these cases, one of them the ulnar nerve, at a distance of seven and a half centimeters. That portion of nerve had been shot away above the elbow. By simply producing these conditions by uniting the severed ends of the nerve with about twenty strands of fine catgut, suturing from above down and from below upward, so that there was a bundle of catgut like a telegraph cable between the ends, the conditions necessary for the passage of the nerve were secured. Within three years the conditions in the arm were so perfect that the boy was able to play the banjo with that hand.

DR. F. B. LUND, Boston, did not agree with Dr. Ochsner that it is necessary to get an end-to-end anastomosis. When a nerve is cut, making an ordinary slit, the knife edge is pretty rough and sufficient fibers are cut off transversely to make Dr. Taylor's method efficient. He has operated on two patients, one of whom has had complete paralysis for four months. He sutured the nerve into the hypoglossal, exactly as described by Dr. Taylor, and the woman made a perfect recovery. The second case was a woman who had had a facial paralysis for seven years. The nerve was thin and frazzled. It was hard to get out and hard to handle. But Dr. Lund succeeded in suturing it into the hypoglossal and her face is now symmetrical in repose and she can draw it over almost as far on the paralyzed side as on the other.

DR. JOHN B. MURPHY, Chicago, believes that the end to end approximation creates the ideal condition. A lateral approximation will only approximate a few axon units because of their insulating medullary sheath. Unless that sheath is destroyed there will not be a transmission of function from one extremity to the other. That is definite and positive. He thought that Dr. Keen's experience is in striking contrast with his own in the retention of the size and vitality of the peripheral segment of the nerve. Dr. Murphy had the same apprehension in a case of paralysis of the posterior cord of the brachial plexus operated on twenty-six years after the occurrence of the trouble. The distal end of the posterior cord was as large as normal and had the typical faradic resistance in the muscles.

Dr. Murphy had a case of a lesser degree of paralysis from a trauma involving the upper four roots of the brachial plexus. They were cut off close to the spinal foramen. The electric reaction was present seventeen years after the injury, which showed that not only did the nerve continue the same size, but that there was regenerated in that nerve, without approximaiton or union, an axon that had faradic conductivity. In another case of bullet wound where the external popliteal nerve was cut off, he operated ten weeks later and there was not the slightest faradic reaction. Why? Because in the latter case the axis cylinder did not have time for reproduction of the peripheral source of supply, whereas in the other case it did have time to regenerate.

Dr. Cushing's remarks, he said, are instructive and they are the most positive evidence that the axon regenerates not only from the proximal side but with equal force and to an equal degree from the distal side. That there is a certain chemotaxis or attraction at work is beyond question. Referring to Dr. Powers' paper, Dr. Murphy said that there are two types of paralysis which result from pressure: The flaccid paralysis, always the result of suppression of function or division of the peripheral axon; the other the result of myositis which always causes contraction of the involved muscles. They are both amenable to two types of treatment, and Dr. Murphy emphasized two types of treatment: one where the nerve is divided completely, which requires a reapproximation with resection of the bulb end, and it is the omission of resection of the bulb end that gives bad results in so many cases reported in the literature. If the paralysis is due to compression, that can be relieved, first by liberation from cicatricial tissue the mere compression of which stops the transmission of function. Second, if the nerve has been compressed severely, where the nerve is infiltrated and a connective band connects the two ends, then a resection of the nerve must be made. In the second class of cases there are always some fibers of the muscles left, and even when there is extensive contraction, where the finger nails are driven into the palms of the hands, the elonga-

* Dr. Keen added a comment, subsequent to the session, saying, that in closing the discussion Dr. Taylor very properly called attention to the fact that functional return can not usually be expected under two months. While this is true, his experience is that if the post-operative treatment by electricity, massage, douches, etc., is neglected, there will usually be no return of function, even after a long time.

tion of the tendons by tendoplasty very freely compensates the patient for the operation.

DR. ALFRED S. TAYLOR, New York, did not think that Dr. Keen should record his last two cases as failures, because he saw them for only two months after the operation. There is no evidence of a returning nerve function from regeneration of the nerve until three months after operation. So that Dr. Keen may still live in hope that these cases have had their lost nerve functions restored.

DR. CHARLES POWERS, Denver, said that the Volkman-Leser is a definite type of a case in which the nerves are not at fault. The muscles here have undergone a fibrosis and the operations on the nerves will not cause a regeneration of these muscles. He believes Dr. Roberts' cases were of the Volkman type. In these, as in the two cases reported by Dr. Ferguson of Chicago, shortening of the bones or lengthening of the tendons may do a great deal of good.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and methods of treatment for the diseases seen especially in every-day practice. Contributions will be welcomed from our readers.]

Scarlet Fever.

The specific treatment of this condition is still *sub judice* and the symptomatic management of the disease finds favor with most writers. Rest in bed during the acute febrile period, and continued for one or two weeks afterward, is imperative, and great care should be taken to prevent undue chilling of the body. This does not preclude, however, the judicious use of hydrotherapy for the fever.

FEVER.

For mild cases with moderate elevation of temperature a tepid sponge bath once or twice daily will usually be sufficient. Heubner, in *Modern Clinical Medicine*, for cases with intense fever and associated nervous symptoms, advocates the use of repeated packs, the influence of which may be extended to an hour without causing a decided internal congestion, as in the case of cold baths, which, in his experience, are not well borne. Two beds, each supplied with a sheet and woolen blanket, are necessary. The cover and the sheet, which have been wrung out in cold water (at from 59 to 60 F.), are spread out, the naked child is enveloped up to the neck, first in the sheet, then in the woolen blanket, and allowed to remain so for ten minutes, or, if the hyperpyrexia is intense, for fifteen minutes. In the meantime the second bed is prepared in a similar manner and the child, after it has been taken from the first pack, is immediately enveloped in the second for ten to fifteen minutes, and so on for an hour, so that the decided cooling is repeated from four to six times. The difference between this method of cooling and a cool bath is obvious; between the renewed coolings the sheet warms itself inside the woolen covering and the blood remains on the surface of the skin. The result of the cooling is energetic. This procedure must not be used more frequently than two or three times a day. In the intervening periods the child is allowed to rest.

In cases in which there is marked nervous involvement, cold affusions in a warm bath are of use. The duration of this (temperature from 90 to 95 F., according to the condition of the pulse) may be five, ten, or even fifteen minutes (in older children), but may be also very much shortened. The principal indication here is the cold affusion. The children are comfortable in the warm fluid, which is always from 12 to 15 degrees lower than the temperature of the body. From a slight height water cooled by ice is poured over the head, neck, back and chest at short intervals, according to the length of the bath; from 5 to 6 liters are to be used. The external auditory meatus is closed by plugs of cotton, the parts of the skin on which the cold water is poured are gently rubbed during this procedure, as well as the trunk and extremities which remain in the bath. Each affusion causes deep respiration that can not be attained by any other method, therefore, a very decided area of the lungs is influenced. A number of other reflexes also occur. The effect on the centers in the medulla can not be mistaken, he declares. The baths are repeated four or even six times daily. Usually after this procedure children will take a larger quantiy of nourishment, followed by quiet sleep.

Frühwald recommends the use of ice compresses or Leiter's coils to the head in cases in which there is much headache, stupor or pronounced nervousness.

THROAT.

Frühwald further recommends the application of cold compresses to the throat when there is marked angina with secondary swelling of the glands, and the following, to be used as a gargle or spray:

℞. Acidi borici 3iii 12
Acidi salicylici ..... gr. xl 2 | 50
Aquæ dest. ..... Oi 500
M. Sig.: To be used as a gargle every one or two hours.

℞. Acidi carbolici ..... m. lxxx 5
Aquæ dest. ..... Oi 500
M. Sig.: Use as gargle every hour.

℞. Hydrargyri chloridi corrosivi ..... gr. vii | 50
Aquæ dest. ..... Oi 500
M. Sig.: Use as gargle every two hours.

The above solutions may be used in an atomizer and sprayed into the throat at intervals. If the spraying can be done correctly it is much more effectual than to have the patient gargle. If diphtheria is present the usual local and constitutional measures should be employed.

ELIMINATION.

It is important in this disease to have all the emunctories freely opened. Early in the disease, after the vomiting has subsided, the following should be given:

℞. Hydrargyri chloridi mitis ..... gr. i | 06
Olei gaultheriæ ..... m. i | 06
Sacchari lactis ..... gr. l 3
M. et ft. chart. No. x. Sig.: One powder every half-hour.

It is well to follow the calomel by an appropriate dose of some saline. In children Rochelle salts or the solution of citrate of magnesium are to be preferred. The use of water internally at regular intervals and in specified amounts is to be especially recommended. Parents or nurse should be told how much water is to be given and at what intervals. It should be impressed on them that this is as important as the administration of any medicine. Water keeps the kidneys flushed and is an excellent prophylactic measure against scarlatinal nephritis.

A saline should be administered during the course of disease in order to keep the bowels opened. The following has been found useful to promote elimination by the kidneys:

℞. Potassii acetatis
Potassii citratis, āā ..... 3ii 8 |
Syrupi limonis, B. P., q. s. ad ..... fʒiii 90
M. Sig.: One teaspoonful every three hours. This dose may be given to a child from 6 to 10 years old. Each dose should be followed by half a tumblerful of water.

DIET.

All observers agree that scarlatinal patients should be kept on a liquid diet. Frühwald states that the diet should consist of milk with a little cocoa or malt coffee, if desired; dishes prepared from milk, wheat bread, and later thick chicken or veal broth (bouillon). After the third week, if the urine is normal, light meat, custards, green vegetables, eggs, and later a little dark meat may be permitted.

KIDNEY COMPLICATIONS.

Rover, in the *Pennsylvania Medical Journal*, discusses an analysis of the kidney condition in 800 cases of scarlet fever treated with routine doses of chloral hydrate, contrasted with 756 cases in which the usual remedies were employed, and reaches the following conclusions:

First. Chloral hydrate is of distinct value in the treatment of scarlet fever, and when used in doses of sufficient size to secure light somnolence does not seem to be a circulatory depressant.

Second. Chloral hydrate ameliorates nervous symptoms better than any remedy yet suggested in the treatment of scarlatina.

Third. Chloral hydrate allays the itching of the skin often found annoying in scarlet fever.

Fourth. When chloral hydrate is given as a routine measure during the febrile period, and for some days thereafter, postfebrile nephritis appears to be less frequent.

Fifth. This study would seem to justify the more extended use of chloral in the treatment of scarlet fever, and a more detailed study as to how it acts on the kidney itself.

(This subject will be continued.)

Rheumatic Joints.

Pouchet, in *Le Progrès Médical*, recommends the following combination as a counter-irritant and absorbent application to rheumatic joints:

℞.	Acidi salicylici Olei terebinthinæ, āā.....3iss	6
	Adipis lanæ Adipis benzoinati, q. s. ad., āā.....℥iiss	75

M. Sig.: Apply locally to joints once or twice daily.

Potassium Chlorate in Hay Fever.

A letter from Holland in the *Wien. klin. Rundschau* for January 27 states that the well-known ophthalmologist of Leyden, Professor Koster, has long suffered from hay fever and derived little benefit from any treatment, even from the antipollen sera. As a last resort he used a 3 per cent. solution of potassium chlorate, gargling with it and instilling it into the nose and conjunctival sac, three times a day, during the season. This warded off the attacks entirely, and when, on suspension of the treatment, an attack was impending, he was able to abort it with a 5 per cent. solution or insufflation of 0.1 or 0.2 gm. potassium chlorate directly into the throat once or twice a day. His success, it is said, was so pronounced with these measures on himself and others that he applied the 3 per cent. solution in treatment of conjunctivitis of other origins and this has become a favorite method of treatment of conjunctivitis in Holland. The possibility of kidney irritation through continued usage should be remembered.

Benzin Arrests Transient Redness of the Nose.

F. Bruck states that a single application of petroleum benzin on cotton or lint will at once arrest the tendency to redness of the nose from strong coffee or tea, emotions, or exposure to cold or heat, observed in some individuals. The benzin will also abolish the shiny aspect of the nose occurring with the hyperemia or without it. The benzin-impregnated cotton is pressed on the spot for a few seconds, without rubbing, covering merely the reddened parts and taking care not to allow the benzin to get into the eyes, nostrils or mouth. In a communication on the subject to the *Med. Klinik*, Feb. 3, 1907, Bruck states that the petroleum benzin does not have the slightest irritating action on the skin, and is by far the best method of cleansing the skin in acute eczema or similar conditions.

Medicolegal

"Practice of Medicine" Without Drugs.

The Supreme Court of New York, Appellate Division, First Department, affirms, in the case of People vs. Allcutt, a judgment convicting the defendant of the crime of practicing medicine without being lawfully authorized and registered. The court says that the evidence tended to establish that in the window of the defendant's residence was exhibited a sign, "Dr. E. Burton Allcutt, Mechano Neural Terapy;" that on the bell outside the door was the name "Dr. Allcutt;" that in the office building in which he had an office there appeared on the directory in the hall, "Dr. E. Burton Allcutt;" that he had and distributed a card reading, "Dr. E. Burton Allcutt, mechanoneural therapy," giving two addresses with office hours at each and 'phone number, and that his receipt for services rendered was signed "Dr. E. Burton Allcutt."

The evidence in this case further tended to establish that the complaining witness visited the defendant at the office address given; that he said he was Dr. Allcutt, and, "I usually see all my patients up town in the afternoon and I am down in this office in the morning." The witness having said that she was troubled with severe headaches, was nervous and had frequent spells of vomiting, the defendant told her that he wished her to remove her corsets in order to examine her thoroughly to find out what her trouble was. He examined her chest, heart and back by placing his ear to her heart; he tapped with his fingers. The witnesse asked, "Doctor, I also have a very severe pain in my left arm; do you think it is rheumatism?" He said, "You are entirely too young to have rheumatism; it is from your stomach; you have malaria and stomach disease." She said to him, "Can you cure me?" The defendant said, "Certainly I can. You will have to take twelve treatments, which will cost $25 in advance." He said he gave no medicine at all, but quieted the nervous system. He was asked if he called at patients' residences, and he replied, "Certainly." Witness asked, "Doctor, can you cure all kinds of diseases without drugs?" He said, "Yes; I find I can cure without drugs, I can cure all diseases that any physicians can cure without drugs, and also diseases that they can not cure with drugs." He said that he had practical medicine; that he had given up drugs; that he could cure anything that physicians cured. The witness then paid $5 for the examination and received a receipt. Subsequently the defendant called at her residence in response to a telephone call. The witness told him that she felt ill all day, that she had a chill and had been vomiting, had a pain in the region of her abdomen. The defendant took hold of her hand, felt of her pulse, looked at her tongue, examined her throat and said: "It is all from your stomach. I want you to drink a quantity of lukewarm water with salt in it." He gave it to her in spoonfuls. He said, "You must not eat pork or potatoes or any kind of sweets," and then said, "I will give you a treatment." Witness testified that the defendant started to treat her back with his fingers; he said he was treating her nerves; he treated her spine by putting the fingers on her spine, the ends of the fingers, a touching sensation, nothing like kneading; he did this for about an hour. He varied that treatment, on the neck, breast, heart and stomach in the same way, just by his fingers. He advised her in case she had pains in the night, if the pain in her abdomen were severe, to place an ice bag on it and one on her feet, and if her bowels troubled her to place a hot-water bag on her back and go to bed, not to lie on the couch, and if she got any worse to send for him. Her husband asked him, "Doctor, what are you doing?" He replied, "I am treating her nerves. Don't you see how quiet she is now?" Five dollars was paid for that visit. The witness testified that as a matter of fact there was nothing the matter with her, and that she was acting during these interviews as a detective.

The defendant in his own behalf testified that he practiced the art of mechano neural therapy and that he was a graduate of a college of mechano neural therapy. It was conceded that such college was not recognized by the Regents of the State of New York, and that a diploma of that institution would not give the right to practice nor to an admittance to an examination to determine the fitness of such a person to practice medicine, and that the defendant was not registered as a physician in the County of New York. The defendant also testified that prior to his attendance at said college he had been practicing massage, and was a graduate of the Mills Training School, attached to Bellevue Hospital, and had engaged in his profession as a nurse; that the statement of the complaining witness was substantially correct; that he had not studied medicine, except from the standpoint of a nurse; that mechano neural therapy means mechanical nerve treatment, a gentle pressure on all parts of the body; that the whole theory of this science is that disease comes from lack of blood circulation, and that the treatment proceeds on the theory of assisting the circulation back into normal condition.

The contention of the defendant was that, conceding all the facts proved, he was not guilty of the crime charged, inasmuch as he was not practicing medicine within the meaning

of the statute, in that he neither gave nor applied drugs or medicine nor used surgical instruments.

Section 153 of the New York Public Health Law (Chap. 661 of the Laws of 1893) provides as follows: "Any person who, not being then lawfully authorized to practice medicine within this state and so registered according to law, shall practice medicine within this state without lawful registration . . . shall be guilty of a misdemeanor."

Continuing, the court says that to confine the definition of the words "practice medicine" to the mere administration of drugs or the use of surgical instruments would be to eliminate the very cornerstone of successful medical practice, namely, the diagnosis. It would rule out of the profession those great physicians whose work is confined to consultation, the diagnosticians, who leave to others the details of practice. Section 146 of the Public Health Law provides that persons desiring to practice must pass a Regent's examination made up of "suitable questions for thorough examination in anatomy, physiology and hygiene, chemistry, surgery, obstetrics, pathology and diagnosis and therapeutics, including practice and materia medica." Diagnosis would, therefore, seem to be an integral part of both the study and practice of medicine, so recognized by the law as well as common sense. The correct determination of what the trouble is must be the first step for the cure thereof. It is a well-known fact that the disease popularly known as consumption may, if discovered in time, be arrested, if not entirely eradicated from the system, by open-air treatment in the proper climate, and that in such cases use of drugs has been practically given up. Would the physician, in such a case, who by his skill discovered the incipient disease, advised the open-air treatment and refrained from administering drugs, not be practicing medicine? It may be difficult by a precise definition to draw the line between where nursing ends and the practice of medicine begins, and the court should not attempt, in construing this statue, to lay down in any case a hard and fast rule on the subject, as the courts have never undertaken to mark the limits of the police power of the state or to have precisely defined what constitutes fraud. What the courts have done is to say that given legislation was or was not within the limits of the police power, or that certain actions were or were not fraudulent.

The defendant particularly relied on the case of Smith vs. Lane, 24 Hun 632, decided in 1881, and cited five cases in other states as in harmony with it. But the court does not consider the remarks of the judge in Smith vs. Lane as being an exhaustive or exclusive definition of the term "practice of medicine." And it says that State vs. Lifring, 61 Ohio St. 39, was under the peculiar language of the statutory definition which was held to require the use of drugs in order to constitute the practice of medicine. There was subsequently an amendment of the Ohio statute, and the subsequent cases of State vs. Gravett, 65 Ohio St. 289, and State vs. Marble, 72 Ohio St. 21, were decided the other way. State vs. Herring, 70 N. J. L. 34, was also decided on the wording of the statute. Nelson vs. State Board of Health, 57 S. W. 501, a Kentucky case, and State vs. McKnight, 131 N. C. 717, are not entitled to be considered authorities in this jurisdiction, inasmuch as they proceed on the proposition that in those states it would be unconstitutional for the legislature to limit the right to practice medicine—a doctrine counter to that held in the rest of the Union. With the Christian scientist case of State vs. Mylod, 21 R. I. 632, the court contrasts that of People vs. Pierson, 176 N. Y. 201. It also says that, as opposed to the cases following Smith vs. Lane, the courts of Massachusetts, Maine, Michigan, Iowa, Missouri, Colorado, Nebraska, Illinois, Ohio, Alabama, Indiana, New Mexico, South Dakota and Tennessee, refuse to restrict the "practice of medicine" to the administration of drugs or the use of surgical instruments. It cites the case of Bragg vs. The State, 134 Ala. 164, and says that in that case and in the note to O'Neill vs. State, 3 L. R. A., N. S., 762, may be found collected the cases in the several states as indicated above, which did not follow the definition of practice of medicine as limited and restricted in Smith vs. Lane.

Finally, the court says: We are of the opinion, from the general current of the authorities throughout the country and from examination of the history and growth of our own public health statutes, that we should not apply the rule as claimed to have been laid down in Smith vs. Lane. When we find, as in this case, a defendant holding himself out by sign and card as a doctor, with office hours, who talks of his patients and gives treatments, who makes a diagnosis and prescribes diet and conduct and remedies, simple though they be, and who asserts the power to cure all diseases that any physician can cure without drugs and also diseases that they can not cure with drugs, and who takes payment for a consultation wherein there was an examination and determination of the trouble, that is, a diagnosis, as well as payment for subsequent treatment,even if no drugs are administered, we must hold that he comes within the purview of the statute prohibiting the practice of medicine without being lawfully authorized and registered.

The judgment of conviction should, therefore, be affirmed.

Expressions and Appearances.

The Court of Civil Appeals of Texas says, in St. Louis & San Francisco Railroad Co. vs. Boyer, a personal injury case against the railroad company, that the suffering of a party in many cases can only be ascertained by expressions of the party himself, and, this being the best evidence of which it is susceptible, such evidence is admissible if such expression is usual and natural under such condition. Whether or not the plaintiff in this case was feigning was for the jury to determine, and whether or not the expressions in question were made some time after the accident did not affect its admissibility, but might affect the weight that should be given to it. The court also holds that, under all the authorities, testimony as to the appearance of a party is admissible. It says that ordinarily it would be impossible for a witness to give to the jury such a description of the person's condition or state facts from which a jury could tell whether a person was sick or well, yet a witness by reason of being with a party and observing his conduct, manner and appearance might form an opinion of the party's condition in that regard. While perforce of the situation it is but a conclusion, the authorities hold such an opinion is admissible by reason of the situation itself. The weight given to such testimony depends, of course, on the intelligence and opportunity of the witness in forming an opinion.

Liability for Wrecking of Nervous System by Fright.

The Supreme Court of North Carolina says that in the personal injury case of Kimberly and wife vs. Howland, where it affirms a judgment for the plaintiffs, that the defendant was blasting rock with dynamite at about 175 yards from the plaintiffs' residence and a rock weighing about 20 pounds from one of the blasts crashed through a portion of such residence. It was true that the defendant did not know, at the time he fired the blast, that the wife was lying in bed in her home in a pregnant condition, but he or his agents knew it was a dwelling house, and that in well-regulated families such conditions occasionally exist. While the defendant could not foresee the exact consequences of his act, namely, wrecking the wife's nervous system and nearly producing a miscarriage, he ought, in the exercise of ordinary care, to have known that he was subjecting the plaintiff and his family to danger and to have taken proper precautions to guard against it.

It was argued in this case with much earnestness and ability, backed by most respectable authority, that the wife's injuries, if she sustained any, were the result of fright without any contemporaneous physical injury, and that she could not recover for them. This brought the court to the consideration of a question concerning which, it says, there is much conflict among the authorities. But it says that it will not undertake to either reconcile or review them. All the courts agree that mere fright, unaccompanied or followed by physical injury, can not be considered as an element of damage. The testimony offered in behalf of the plaintiffs tended to prove that the wife was lying on her bed heavy with child at the moment the rock crashed through the roof; that, although it did not strike her, it greatly shocked her nervous system and nearly caused a miscarriage, and that she had never recovered

from the effects of it. If this testimony was believed, the injury to the wife was a physical injury resulting from shock and fright and directly traceable to it.

There was much conflict of evidence, but the plaintiffs' testimony tended to prove that, had not the rock crashed through the roof, the wife would not have endured the nervous physical pain and suffering which had followed. The nerves are as much a part of the physical system as the limbs, and in some persons are very delicately adjusted, and, when "out of tune," cause excruciating agony. The court thinks that the general principles of the law of torts support a right of action for physical injuries resulting from negligence, whether wilful or otherwise, none the less strongly because the physical injury consists of a wrecked nervous system instead of lacerated limbs. Injuries of the former class are frequently more painful and enduring than those of the latter. But the jury was correctly instructed to allow nothing because of any mental suffering on the part of the husband.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

The Medical Record, New York.

February 16.

1 *Supernumerary Cervical Ribs and Their Effects on the Brachial Plexus and Subclavian Artery. C. K. Russel, Montreal.
2 *Conquest of Cancer. R. Bell, London.
3 *Intranasal Conditions Bearing on the Etiology of Diseases of the Ear. G. Hudson-Makuen, Philadelphia.
4 *Streptococcus Pneumonia. G. W. McCaskey, Fort Wayne, Ind.
5 *Report of Three Epidemics of Measles with Particular Reference to Koplik's Symptom. C. J. Dillon, New York.
6 *Radical Cure of Trigeminal Neuralgia by Peripheral Operations. A. V. Moschowitz, New York.
7 *Pneumonia in Children: Its Successful Management by Hydriatic Measures. W. P. Worster, New York.

1. **Supernumerary Cervical Ribs.**—Russel calls attention to certain clinical symptoms which may be caused by the pressure of supernumerary cervical ribs on the cervical plexus. He reports the histories of several cases. In the first case the patient complained of pain and cramp in the right hand and arm. There was wasting of the thumb muscles and general weakness of the right hand. The right hand was always colder than the left. The symptoms were gradually progressive. The supernumerary rib was removed. The operation so far has proved very successful. The patient has had no return of the neuralgic pains or cramps. In another case quoted by the writer the fingers became gangrenous. Amputation first of the fingers and later of the arm became necessary. The patient finally committed suicide. It has not yet been determined whether the abnormality was really a cervical rib or an undeveloped first thoracic rib.

2. **Conquest of Cancer.**—Bell refers to the recent work of Beard in relation to the trypsin treatment of cancer. He considers it of the first importance in the treatment of cancer to aim at restoring the functional activity of the thyroid gland and at the same time to adopt measures which will reduce the tendency to the introduction of toxic materials from the intestines. This can be accomplished only by adapting the dietary to the requirements of the body, and to the capability of the digestive organs completely to digest and to assimilate the food, aided by the thorough evacuation of the effete matter at least once in twenty-four hours. The thyroid, however, is not the only organ whose utility is impaired. It is likely, he states, that the pancreatic secretion is to a certain extent in abeyance, and, as a rule, the proportion of hydrochloric acid in the stomach is greatly diminished.

3. **Intranasal Conditions and Ear Diseases.**—According to Makuen it is not generally recognized that diseases of the ear, especially in their interval stages, are largely dependent on intranasal conditions.

4. **Streptococcus Pneumonia.**—McCaskey reports a case of pneumonia, with characteristic onset and typical signs, which was clearly due to a streptococcus infection.

5. **Koplik's Sign in Measles.**—Dillon believes that Koplik's sign is a constant, definite, early diagnostic sign of measles of greater diagnostic value when present than even the rash. In 221 cases observed from the period of incubation well into convalescence it was definitely absent only twice.

6. **Radical Cure of Trigeminal Neuralgia.**—Moschcowitz reports three successful operations for trigeminal neuralgia. The nerve was carefully isolated and divided, the accompanying vessels were treated in a similar manner and then a silver button of suitable size was driven into the foramen so as to fill it completely. The overhanging flat top of the button is moulded to the underlying bone so as to make the closure absolutely tight.

7. **Pneumonia in Children.**—Worster advocates hydrotherapy in the treatment of pneumonia in children.

New York Medical Journal.

February 16.

8 *Physical Processes of Immunity and Infection. J. Wright, New York.
9 *District Nursing and Extra Diet in Treatment of Tuberculosis. H. L. Shively, New York.
10 *Cases Allied to Amaurotic Family Idiocy with Remarks on the Pathogenesis of the Affection. A. Gordon, Philadelphia.
11 *Splenectomy, with Report of Five Successful Cases. W. P. Carr, Washington, D. C.
12 *Typhoid Complicated by Infiltration of the Larynx and Edema of Glottis. L. N. Boston, Philadelphia.
13 *How Long Shall the Patient Stay in Bed After Abdominal Section. J. Vance, El Paso, Texas.
14 *Splanchnoptosis. K. C. Mead, Middletown, Conn.
15 Common Fallacies in Diagnosis of Diseases of Childhood. K. H. Goldstone, New York.

8. **Infection and Immunity.**—This is the first of a series of papers in which Wright expects to make it clear why in all probability the facts stated by him in previous papers as to the occurrence of infection and the absorption of bacteria can better be investigated in the light of the laws of physics than in that of chemistry. The present paper is devoted to a discussion of the conditions and activities of the mucous surfaces of the upper air passages.

9. **District Nursing and Extra Diet in Tuberculosis.**—Shively discussess the methods of nursing and the diet given in the treatment of tuberculous patients at the Presbyterian Hospital Dispensary in New York. The result has been a very satisfactory one.

10. **Amaurotic Family Idiocy.**—Gordon gives the histories of two patients who showed distinct changes in the thyroid gland; in one the gland was enlarged, in the other it was not palpable. One patient was a boy, 9 years of age, the other a girl, a sister of the patient, 13 years of age. The stigmata of degeneration were very extensive. The boy presented among many other stigmata a very unusual anomaly, namely, polydactylism of all four extremities.

11. **Splenectomy.**—Carr believes that if his method of operation for removal of the spleen be carried out carefully, the occurrence of hemorrhage, shock and sepsis will nearly be eliminated. The position of the patient is important. A large sand-bag should be placed under the back, under the upper end of the spleen, and the foot of the table lowered about six inches. The incision may be median or through the left rectus muscle. Carr prefers the latter. The incision should be ample, and, if necessary, a transverse incision may be made from the upper end of the primary wound parallel to and half an inch below the lower border of the ribs. Before attempting to isolate and deliver the spleen a careful examination should be made to determine whether this is possible. If not, the operation should be abandoned. Having decided on continuing the operation, Carr proceeds as follows:

The splenophrenic ligament should be first attacked. The operator, covering the spleen with gauze, draws it to the right, while an assistant draws the left lip of the wound to the left; this exposes the bed of tne spleen and vault of the diaphragm. The spleen may be firmly held in its bed by atmospheric pressure. This is an important fact to remember. When it can be done, the splenic ligaments and all vascular adhesions should be doubly ligated in sections and cut between the ligatures; but when this is difficult the ligaments may all be clamped and the blood supply entirely cut off in this way.

The spleen may then be removed and the clamps afterward sewed round and removed, as the broad ligament clamps are usually removed in oöphorectomy. In difficult cases with extensive adhesions it is possible to grasp all the gastrosplenic ligament between the index and middle fingers of the left hand and to apply a long curved rubber covered clamp. As this ligament contains the chief blood supply of the spleen, the danger of severe hemorrhage will be greatly lessened by securing it first in this manner. The other ligaments may then be clamped or ligated and cut, after which adhesions may be rapidly separated and the bleeding controlled by gauze packing.

Carr pleads for early removal of all enlarged spleens beginning to cause symptoms, unless the operation is contraindicated. He reports five cases of splenectomy—one for ruptured malarial spleen, one for gunshot wound with uncontrollable hemorrhage, one believed to be simple hypertrophy, one for Banti's disease, and one for hypertrophy of a soft inflammatory nature which could not be diagnosticated. All the patients recovered from the operation and all were cured, except one, who was suffering from cachexia and debility, which continued after the operation and caused his death three months later.

12. **Typhoid with Laryngeal Complications.**—Boston reports the case of a man who developed symptoms simulating those seen in membranous croup during the eighth week of typhoid. A tracheotomy had to be performed to give the patient relief from the respiratory distress. Examination of the throat showed a decided infiltration of the mucous membrane of the larynx, and a variable amount of edema of the glottis.

13. **Stay in Bed After Abdominal Section.**—As suitable cases for the out-of-bed treatment of abdominal section, Vance mentions those in which traumatism within the peritoneum is slight; those in which Nature does not require rest. Above all, he states, the patient must not be sick. Vance urges great care in the selection of these cases, because he has found that union of the abdominal wound may not be strong enough to withstand the intra-abdominal pressure of sneezing or coughing even so late as the twelfth day.

14. **Splanchnoptosis.**—Mead has treated 40 cases of splanchnoptosis with an adhesive belt or elastic bandage with good results. Twenty of these patients had a retroverted uterus, some simple, some complicated, for which they wore pessaries or tampons during the time in which they were wearing the abdominal supporters. Most of these patients no longer needed a uterine support after six months. Two of Mead's patients were men who complained of indigestion. The adhesive belt gave entire relief from symptoms.

Boston Medical and Surgical Journal.

February 14.

16 *Treatment of Tuberculosis of the Hip Joint. J. E. Goldthwait, Boston.
17 *Statistics of Indigestion in Dermatologic Patients. C. J. White.

16. **Treatment of Tuberculosis of the Hip.**—Goldthwait lays down the principles that are of importance in the treatment of tuberculosis of the hip. Special forms of apparatus or other technical features are not advocated. He emphasizes the value of general hygienic measures, outdoor life, protection of the point from irritation, with as little interference with joint function as possible. In the early cases of hip-joint tuberculosis, before deformities have developed, Goldthwait puts on a plaster-of-Paris spica bandage extending from just above the knee to just above the crests of the ilia, the hip being in a position of physiologic rest. This controls the muscle spasm. The position practically consists of about 20 degrees of flexion, 15 to 20 degrees of abduction, and 10 degrees of outward rotation. The patient should be encouraged to walk about, bearing the weight on the leg. The plaster-of-Paris dressing should be removed in one or two months, and should be reapplied until evidence of active disease, as shown by pain and muscle spasm, has passed. When this time is reached, a splint made of stiffened leather of the same shape as the plaster splint is applied. In a short time, if all goes well, the splint should be omitted at night and gradually can be entirely discontinued.

In the more acute cases and those of longer duration, Goldthwait advises rest in bed with traction until the desired position can be attained. In the advanced cases associated with much destruction of tissue, or when it may be deemed desirable to remove the focus of disease in order to bring about more rapid healing, or when conservative measures fail to reduce existing deformities, surgical intervention is indicated. Goldthwait urges that in all of these cases an attempt should be made to increase the resistance of the individual to the disease, as is suggested by the theory of the opsonins.

17. **Indigestion in Dermatologic Patients.**—Being convinced that many chronic dermatoses may be due to errors of metabolism, White undertook to investigate the powers of stomachic digestion of 438 men and women who suffered from some skin disease. During this period of investigation 61 different diseases were diagnosticated in these 438 patients. The following summary represents the results of White's study:

1. Fifty-nine per cent. of hospital-seeking skin patients have one or more symptoms of stomachic indigestion.
2. Fifty-two per cent. of the men are so affected against 65 per cent. of the women.
3. Americans head the list of dyspeptics with 62 per cent., while the Irish follow with 57 per cent. and the Russian or Polish Jews present 55 per cent.
4. Eructations are the most prevalent symptoms of dyspepsia and occur in 39 per cent., regurgitation in 36 per cent., epigastric weight in 31 per cent., and pain in 19 per cent.
5. Our established ideas as to the digestibility of certain classes of foods and as to the indigestibility of certain special articles are correct.
6. Our previous etiologic association of certain dermatoses with dyspepsia is substantiated with one exception, for whereas our present standard is 59 per cent., we have found in acne rosacea 71 per cent., in acne vulgaris (the exception just mentioned) 55 per cent., in eczema 64 per cent., in eczema seborrhoicum 85 per cent., in pruritus 85 per cent., in seborrhea 83 per cent., and in urticaria 85 per cent.

St. Louis Medical Review.

February 9.

18 *Selection of Anesthetics. P. Y. Tupper, St. Louis.
19 *Use of Local Anesthesia. W. Bartlett, St. Louis.
20 *Ether Anesthesia by the Open Method. H. S. McKay, St. Louis.
21 Being Sick Considered as a Business of the Patient. A. L. Benedict, Buffalo.

18. **Selection of Anesthetics.**—Tupper emphasizes the danger attending the administration of any general anesthetic and urges careful selection in the choice of the anesthetic and of the anesthetist. He says that the worst anesthetic, if well given, is fairly safe; the best, if badly given, is full of danger.

19. **Local Anesthesia.**—A relatively small number of operations are performed by Bartlett under local anesthesia. He uses eucain in the case of all patients who refuse a general anesthetic, and when operating for an exophthalmic goiter, when the pulse is under 120. He also employs it in work on the fingers and toes, and when nerve blocking must be resorted to.

20. **Ether Anesthesia by the Open Method.**—McKay claims that if ether is given on an open mask, as he has been in the habit of doing, it would be difficult to produce death in the time required for an ordinary operation, as a sufficient quantity of ether would scarcely be retained on the mask. He describes his method as follows:

An ordinary Esmarch chloroform inhaler is covered with three or four layers of gauze, over which is placed a piece of thin cloth. A towel folded three or four times is placed over the patient's eyes to prevent irritation from the ether. Ether is then slowly dropped on the mask, which is held slightly away from the face until the patient is somewhat accustomed to the fumes. The attention of the patient is diverted from the anesthetic by talking to him, while the mask is slowly lowered over the nose and mouth. Considerable space is left between the mask and face where air enters freely. After a very short time this space is lessened by placing a towel around the portion of the mask, which does not fit snugly around the face, and the amount of ether is increased. Ordinarily, surgical anesthesia is obtained in five minutes. If the patient should struggle or hold the breath as the amount of ether is increased, remove the mask, allowing plenty of air, and very shortly normal respiration is resumed and the ether may be continued without further trouble. One-half hour previous to beginning the anesthetic a hypodermic of ¼ grain of morphin and 1-120 grain of atropin is given the patient. This serves to quiet him and there is rarely the troublesome secretion of mucus so frequently met unless this is given. The amount of the anesthetic is greatly reduced, and many times it is possible to do major operations with only primary anesthesia.

Lancet-Clinic, Cincinnati.

February 16.

22 Forceps. M. A. Tate, Cincinnati.
23 The True Cause of Functional Neuroses. G. G. Buford, Memphis.
24 Pathology of Idiopathic Epilepsy. J. W. Selman, Greenfield, Ind.

Medical Herald, St. Joseph.
February.

25 *New Retention Suture in Operation for Cleft Palate. J. P. Lord, Omaha.
26 Chairman's Address, Medical Association of the Southwest. H. L. Alkire, Topeka.
27 *Adenoids. F. Vinsonhaler, Little Rock, Ark.
28 Eye Complications of Nephritis. E. E. Hamilton, Wichita.
29 Ophthalmology and a Few of Its Contributors. J. R. Hamill, Guthrie, Okla.
30 *Use of Lead Styles in Treatment of Stricture of Nasal Duct. H. Moulton, Fort Smith, Ark.
31 *Ophthalmic Neuroses of Menstrual Origin. R. E. Runkle, El Reno, Okla.
32 Mastoid Surgery. H. C. Todd, Oklahoma City.
33 *An Unusual Ear Case. E. S. Ferguson, Oklahoma City, Okla.
34 Value of Certain Silver Salts in Ophthalmic Practice. A. W. McAlester, Jr., Kansas City, Mo.
35 Dr. John Thompson Hodgen. A. Van Meter, Lamar, Mo.

25. **New Retention Suture in Cleft Palate Operation.**—Lord has devised a substitute for the lead plates generally used in operations for cleft palate. Lead wires are covered with rubber tubing, and over this tubing is tied the retaining suture of celluloid linen. It is waterproof and is not likely to become septic. Subsequently Lord devised buttons to take the place of the cylinder.

27. **Adenoids.**—Vinsonhaler discusses the treatment of adenoids. Speaking of the anesthetic he says that he prefers nitrous oxid gas followed by ether, not only for removal of adenoids, but also when a tonsillotomy must be done.

30. **Lead Styles in Stricture of Nasal Duct.**—In cases of obstruction of the nasal duct in which syringing and probing fail to give any relief to the patient, Hamill has obtained good results from permanent dilatation of the duct with lead styles. He makes these styles from lead wire, fitting the style to the canal. After the first few hours the patient will not be conscious of the style and it may be worn indefinitely. Hamill has left the style in place for as long as a month without removal. In one case the patient was forced to have the style in the canal for a year and a half before it was finally and permanently removed.

31. **Ophthalmic Neuroses of Menstrual Origin.**—Runkle says that the severity of visual disturbances which are dependent on the menstrual function and its anomalies seem to rest on the extent of the departure from the normal condition of the sexual organs; that is, the greater the variation from the normal condition of the uterus and its appendages, the greater the ocular involvement proportionately.

33. **Unusual Ear Case.**—For about six years Ferguson's patient complained of a distinct ticking sound in the left ear similar in character to the ticking of a watch, about twice the rapdity of the heart beat, but slightly irregular. The ticking can also be heard by an examiner at a distance of one foot from the ear. Hearing is almost lost. Treatment of various kinds has failed to give any relief. Ferguson suggests that the condition may be one of spasmodic contraction of the tensor tympani muscle.

Journal of Experimental Medicine, New York.
January 23.

36 *Calcification of Breast Following Typhoid Abscess. W. S. Thayer and H. H. Hazen.
37 Toxins and Antitoxins—Snake Venoms and Antivenins. T. Madsen and H. Noguchi.
38 Leukolytic Action of Blood Serum of Leukemia Treated with Roentgen Ray and the Injection of Human Leukolytic Serum in Leukemia. J. A. Capps and J. F. Smith.
39 *Cytology of Multiple Non-Inflammatory Necrosis of Liver and Certain Related Degenerative Changes in Cells. D. Symmers.
40 *Experimental Atresia of Ureter. T. Sollmann, W. W. Williams and C. E. Briggs, Cleveland, Ohio.
41 *Hydronephrosis of Right Kidney, Congenital Atresia of Left Ureter and Marked Atrophy of Left Kidney. D. P. Allen and H. P. Parker, Cleveland.
42 Electrical Charge of Toxin and Antitoxin. C. W. Field and O. Teague, New York.
43 Cause of Increased Portal Pressure in Portal Cirrhosis. F. C. Herrick, Cleveland.

36. **Calcification of Breast Following Typhoid Abscess.**—Thayer and Hazen report the case of a negress who, during a severe attack of typhoid, developed an abscess on the breast from which *Bacillus typhosus* and *Staphylococcus aureus* were obtained on culture. Eleven days after opening the abscess and packing with iodoform gauze, a deposit of calcium appeared in the granulation tissue bordering the wound which rapidly increased until the rim of the opening and the lining granulation tissue were converted into a hard, calcareous mass. Several nodules of a similar character appeared also in other parts of the breast. The abscess appeared eleven days after the injection of 5 grams of calcium chlorid under the breast and after the total ingestion of 132 grams of calcium lactate during a period of eleven days. The iodoform packing was removed after a month, and the patient was put on a carbohydrate-free diet for twenty-four days. Under this treatment the abscess almost entirely healed, with complete disappearance of the deposit of calcium. Studies of the intake and output of calcium showed that during three days under a diet of milk and eggs, there was a material calcium retention; that during two periods, amounting to three weeks in all, under a carbohydrate-free diet, there was a marked excess of calcium elimination over the intake; and that during the ten days following the last carbohydrate-free period, under a normal diet, there was a retention of calcium. The disappearance of calcium from the breast was associated with the carbohydrate-free diet and the excessive elimination of calcium. The findings in this case are strongly suggestive of those produced experimentally in animals by von Kóssa, who found that in rabbits in which the calcium content of the blood has been artificially increased, it is possible to bring about calcification with doses of iodoform essentially smaller than those required under ordinary circumstances.

39. **Cytology of Multiple Non-Inflammatory Necrosis of Liver.**—Symmers, from a morphologic study of cytolysis, concludes that there are two definite types of structural changes in cells in those pathologic processes which seem to depend on cytolysis. One is characterized by rapid, simple solution of the hyaloplasm with preservation of the cell reticulum, and the other by alteration of the hyaloplasm and reticulum with the formation of amorphous material, both the cell and nuclear membranes remaining very resistant. Extreme tenacity of the cell membrane seems to be the most constant single feature of all forms of cytolysis thus far recognized. Polychromatophilia is associated with solution of the hemoglobin of the red cells, and possibly it may be physiologic as well as pathologic. If the former, in the earlier developmental stage of the red cells it may represent an attempt on the part of the organism to dispose of an excess of such cells by solution, or the cells may not yet have received their full supply of hemoglobin.

40. **Experimental Atresia of Ureter.**—Sollmann, Williams and Briggs ligated one ureter in each of four dogs to study the functional changes produced in the kidney. Examinations of the kidneys were made from 31 to 185 days after the operations. In each case the renal pelvis on the side operated on was distended with fluid which was found to consist of a transudate, poor in proteids, but somewhat enriched in chlorids and perhaps in urea, phosphates and sulphates; a small quantity of pigment also was retained. The authors conclude that the fluid is probably formed by filtration through a filtering surface not freely permeable to proteids, and that a process of reabsorption also goes on simultaneously in such a manner that the soluble solids are somewhat increased (perhaps to counterbalance the osmotic value of the serum proteids). There is no evidence that the remaining specific renal elements play any part in the formation of this fluid. The anatomic findings of these observers agree with those reported by other investigators.

41. **Hydronephrosis of Right Kidney.**—Allen and Parker report the case of a boy who died of uremia 13 years after an operation for hydronephrosis of the right kidney in which, because of the patient's poor condition, the cavity was drained through the abdominal wall instead of being excised. For a few weeks after the operation a little urine was occasionally passed by the urethra, but later it was passed only through the opening in the side. At autopsy there was found a complete stenosis of the right ureter at its renal end, produced by a fan-shaped mass of fibrous tissue, with hemorrhagic pyelonephrosis and marked distension of the right kidney. In addition there was found a congenital atresia of the left ureter

associated with a marked atrophy and a chronic interstitial nephritis of the left kidney.

Yale Medical Journal.
February.

44 Etiology of Syphilis. G. Blumer, New Haven.
45 New Haven Milk. C. J. Bartlett, New Haven.
46 Case of Renal Calculus; Nephrotomy; Recovery. J. B. Boucher, Hartford, Conn.
47 *Unusually Large Urinary Calculus. A. R. Diefendorf, New Haven.

47. **Large Urinary Calculus.**—Diefendorf reports the case of a man who at the age of 43 began to suffer from paranoia. One year before the onset of his mental disease he was treated for pyelitis of the right kidney. Twelve months after the onset of his mental disease the patient passed a series of small urinary calculi, the largest one-eighth inch in its longest diameter. From this time he passed an occasional calculus, but it was always of small size and rarely caused any inconvenience. At the age of 47 the man began to complain of pains in the stomach which continued for five years, when cachexia made its appearance and it became evident that he was suffering from carcinoma of the stomach. He died of that disease six months later. At the postmortem a small carcinomatous growth was found involving the pylorus, but the greatest interest attached to the right kidney, which appeared enlarged and felt unusually firm and exceedingly heavy. On section of the kidney a calculus was found which completely filled the pelvic space and with its numerous projections extended up into each calix, crowding on the pyramids. Both cortex and medulla were greatly reduced and in places had completely vanished. The calculus weighed 52 grams and measured 4x2x 1¼ inches. A small calculus was found in the pelvis of the left kidney.

Cleveland Medical Journal.
January.

48 Tuberculosis of Peritoneum. L. S. McMurtry, Louisville, Ky.
49 Bladder and Bowel Fistulas Following Abdominal Section. H. Robb, Cleveland.
50 The Budding Paretic. J. D. O'Brien, Massillon, Ohio.

Chicago Medical Recorder.
January 15.

51 Chronic Urethral Discharges in the Male. F. A. Leusman, Chicago.
52 Drug Treatment of Pulmonary Tuberculosis. G. F. Butler, Chicago.
53 Diagnosis of Salpingitis. R. Ballinger, Chicago.
54 Surgical Treatment in Traumatic Ruptures of Kidney, Ureters and Bladder. W. Fuller, Chicago.

Quarterly Journal of Inebriety, Boston.
December.

55 Influence of Inebriety in Railroad Accidents. H. O. Marcy, Boston.
56 Psychosis of Morphinism. T. D. Crothers, Hartford, Conn.
57 Drink and Drug Habitués. F. T. Searcg, Tuscaloosa, Ala.
58 Pathology of the Morphin Habit and Treatment. S. G. Burnett, Kansas City, Mo.
59 Effects of Alcohol in So-Called Medicinal Doses. G. E. Benton, Chester, Va.
60 The Alcohol Cult. J. Madden, Portland, Ore.

American Journal of Urology, Boston.
January.

61 Renal and Ureteral Hematuria. A. C. Chute, Boston.
62 Vesical Hematuria. L. Davis, Boston.
63 Hemorrhage of Urethra and Prostate. E. J. McKnight, Hartford.
64 Pathogenesis and Treatment of Hematuria. C. G. Cumston, Boston.
65 Bilharzia Hematobium. F. W. Robbins, Detroit.

New Orleans Medical and Surgical Journal.
February.

66 Septic Contraindications of General Anesthesia. J. D. Bloom, New Orleans.
67 What Every Physician Should Know of Ophthalmology. H. D. Bruns, New Orleans.
68 Necessity of a Knowledge of Therapeutics by the General Practitioner of To-day. A. Granger, New Orleans.
69 Cases Showing Necessity of Electricity as a Therapeutic Agent. S. C. Barrow, Shreveport.

Mississippi Medical Monthly, Vicksburg.
February.

70 Deflections of the Nasal Septum. H. Flowers, Brookhaven.
71 Morphinomania. R. M. Donald, Inverness.
72 Dysentery. S. W. Glass, Dublin.
73 Leg Amputation for Gangrene. F. L. Bott, Lexington.

Louisville Monthly Journal of Medicine and Surgery.
February.

74 Results of Operations for Prostatic Hypertrophy. I. Abell, Louisville.
75 Medical Treatment of Salpingitis. J. H. Ely, Frankfort.
76 *Wounds of the Liver. J. E. Cannaday, Hansford, W. Va.
77 Cholesteatoma of the Ear. S. G. Dabney, Louisville.
78 Tabulation of Cases and Bibliography of Ruptured Kidney. A. H. Barkley, Lexington, Ky.

76.—See abstract in THE JOURNAL, Nov. 24, 1906, page 1765.

The Military Surgeon, Carlisle, Pa.
February.

79 *Tropical Hygiene in Reference to Clothing, Houses, Routine and Diet. A. Stuart.
80 A Mountain Litter. H. Mareschal, Paris.
81 Influence of Burggraeve in Modern Therapeutics, with Special Reference to Military Practice. W. T. Thackeray.
82 A Geometrical Cyrtometer for the Easy Application of Chicault's Method of Cranio-Cerebral Localization. W. H. Bell.
83 New Field Latrine which Fulfills Requirements for Troops in Active Service. F. C. Herrick, Cleveland.
84 Military Medical Service of the Teutonic Order. J. Steiner, Vienna.
85 Defective Vision as a Cause for Rejection for Military Service. E. L. Ruffner.
86 Febrile Icterus in Port Townsend, Washington. W. G. Stimson.

79. **Tropical Hygiene with Reference to Clothing, Houses, Routine and Diet.**—Stuart, in speaking of the change that has been made in military technic by the colonization of the tropics, says that the white man in the tropics is an exotic and that recruits should never be sent on tropical service, but well-seasoned soldiers should be picked out. Troops intended for such service should be recruited from the natives of our southern states, and, if possible, men of dark complexion should be selected. Headgear for troops should be selected with great care. The sun helmet should be light, have a double body with an air space between and should be so constructed as to protect the temples, the nape of the neck and the face. A layer of tin foil between the cork and the cloth of the helmet seems to be valuable in keeping out many dangerous light waves. For clothing cotton duck for the uniform is both cheaper and cooler than linen duck. The outer garments should be white to reflect the actinic rays, and the underclothing should be of dark-colored material to prevent the penetration of rays that prove injurious. In general, the clothing should be made for comfort and not for "smartness." Stuart calls attention to the fact that most houses built by Americans in the tropics are utterly unfitted for the climatic conditions found there. He says that American architects pay scant attention to local conditions and resent any suggestions from a medical officer as impertinence. He says that the British excel all others in making things comfortable in warm climates, their long experience in colonization standing them in good stead. The bungalow built by the British in India is undoubtedly the best hot-weather house, with its large roof, single story and broad piazza running all around. It should be faced by the compass north or south, according to the point from which the trade winds blow most of the year. In speaking of garrison routine, Stuart says that white people should turn out at sunrise and the morning shower bath be taken in warm water, as cold water is much too stimulating. Fruit should always be eaten with the morning coffee, the fresh native fruit being best. Drills and fatigue work should be done in the early morning, and the important work of the day should be finished before breakfast, which should come at 11:30 a. m. Stuart recommends the "flexion step" recently spoken of by Munson as being particularly valuable in the tropics, as it permits a maximum of ground to be covered with a minimum of effort expended.

Journal of Outdoor Life, Trudeau, N. Y.
February.

87 Tuberculosis Work in Europe and in the United States. J. Walsh, Philadelphia.
88 Tuberculosis Classes in Boston. J. B. Hawes, Boston.
89 Duty of the Consumptive. W. N. Beggs, Denver, Colo.

Virginia Medical Semi-Monthly, Richmond.
February 8.

90 Principles of Surgery. S. McGuire, Richmond.
91 *Wounds of the Liver. J. E. Cannaday, Hansford, W. Va.
92 Diagnosis of Certain Affections of the Liver and Biliary Apparatus. G. P. LaRoque, Richmond.
93 Hydrotherapy. J. C. Walton, Chase City, Va.

91.—This article appeared in the *Lancet-Clinic*, Nov. 3, 1906, and an abstract appeared in THE JOURNAL, Nov. 24, 1906, page 1765.

International Clinics.

Vol. IV. Sixteenth Series.

94 Electrotherapeutics. J. H. W. Rhein, Philadelphia.
95 Prevention and Treatment of Chronic Nephritis. J. M. French, San Diego, Cal.
96 Etiology and Treatment of Chronic Constipation. J. D. Steele, Philadelphia.
97 Treatment of Obesity. P. Grocco, Florence, Italy.
98 Non-operative Treatment of Renal or Ureteral Calculi Causing Colic. H. Lilienthal, New York.
99 Care of Tuberculous Subjects. W. Porter, St. Louis.
100 Pulmonary Tuberculosis in the Middle-aged and Aged. J. E. Squire, London.
101 Physiologic Influence of Lowered Barometric Pressure. H. Sewall, Denver, Colo.
102 Obscure Renal Hematuria. A. R. Elliott, Chicago.
103 Myxedematous Infantilism and Incomplete Myxedema. R. S. Morris, Baltimore.
104 Syphilitic Aortitis. C. Dieulafoy, Paris.
105 Recent Progress in Disorders of the Adrenals. L. Barnard.
106 Treatment of Fractures of the Lower Extremities. G. G. Ross, Philadelphia.
107 Treatment of Hip-Joint Disease. R. A. Hibbs, New York.
108 Tuberculous Hip-Joint Disease, Osteomyelitis and Transplantation of Fibula; and Ankylosis of Jaw. J. F. Rinehart, Oakland, Cal.
109 Vesical Tumors. D. Wallace.
110 Treatment of Hemorrhoids. G. P. Müller.
111 Placenta Prævia and Its Treatment. J. B. DeLee.
112 Lacerations of the Cervix of the Uterus and Their Repair. W. A. N. Dorland, Philadelphia.
113 Chronic Cystitis in the Female. D. H. Craig, Boston.
114 Laryngeal Complications of Tuberculosis. E. F. Trevelyan.
115 The Mastoid Operation. C. W. Richardson, Washington.

Journal of the Medical Society of New Jersey, Orange.

February.

116 Hysteria and Neurasthenia in Women. M. J. Synnott, Montclair.
117 Treatment of Chronic Nervous Conditions. W. G. Schauffler, Lakewood.
118 Chorea. T. B. Prout, Summit.

Journal of Cutaneous Diseases, New York.

February.

119 Syringocystoma. C. J. White, Boston.
120 Elephantiasis of Penis and Scrotum Due to Syphilis. A. Ravogli, Cincinnati.
121 Case of Pemphigus Vegetans. J. M. Winfield, New York City.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

February 2.

1 *Diagnosis and Treatment of Laryngeal Cancer. F. Semon.
2 *Duodenal Ulcer and Its Treatment. A. W. M. Robson.
3 *Repeated Abdominal Section for Perforation of Gastric Ulcer. A. Cuff.
4 *Multiple Internal Diverticula of Small Intestine. A. A. S. Skirving.
5 *Opsonins and Their Utility in Practical Medicine. H. French.
6 *Temperature of Japanese Hot Baths. L. Hill.

1. **Cancer of Larynx.**—In this article Semon expresses his well-known views on cancer of the larynx. He advocates early diagnosis, when thyrotomy will suffice to save the patient in cases of instrinsic cancer, although total laryngectomy will remain the operation of necessity in cases of extrinsic cancer of the larynx.

2. **Ulcer of Duodenum.**—Robson discusses the clinical history of duodenal ulcer in great detail and expresses an opinion that the operation of posterior gastroenterostomy is the treatment for this affection. He has operated on 66 patients without a single fatality. Among 155 cases of acute perforating duodenal ulcer recorded in the literature there was a mortality of 66 per cent. Sixty-one patients were operated on within 24 hours of rupture, with a mortality of 37.7 per cent.; whereas among 63 patients operated on later than 24 hours after rupture the mortality was 82.5 per cent. Of 31 cases in which the time of operation was not stated, but in which the time was probably over 24 hours after rupture, 90.3 per cent. proved fatal. Robson says that it is astonishing to find how long in many of the cases of duodenal ulcer the symptoms persist, the patients being treated for dyspepsia, gout, gastroduodenal catarrh, neurosis, chronic appendicitis, etc. In some of his cases a 10, 15, 20 or even 30 years' history of dyspepsia had been given, with characteristic symptoms throughout and with irregular intervals of relief by treatment and relapses every few weeks or months. He thinks that duodenal ulcer is much more common in early age than is generally recognized, although the condition as usually diagnosed is seen for the most part in the middle-aged.

3. **Repeated Abdominal Section for Gastric Ulcer.**—The patient whose history is recorded by Cuff was operated on twice for the perforation of two totally distinct ulcers of the stomach. Since he was 10 years of age, the patient (now aged 27) had suffered from symptoms referable to serious trouble in his stomach. For 13 years there had been symptoms pointing to mischief in the neighborhood of the pylorus or, more probably of the duodenum. The perforations occurred four years apart. An anterior gastroenterostomy was done at the first perforation. In the interval between the two operations the patient had repeated attacks of gastric pain and vomiting.

4. **Multiple Internal Diverticula of Small Intestine.**—While operating in a case of right-sided acquired strangulated inguinal hernia, Skirving noticed six equidistant depressions on the concavity of a loop of bowel. On exploration with a probe it was found that these depressions represented the mouths of hollow, finger-like processes which projected obliquely in the lumen of the gut for distances varying from one inch to two inches. All ended blindly and were apparently localized invaginations of the whole thickness of the wall of the gut. Repeated attempts to reduce these invaginations failed. The patient has had slight aching pains in the right inguinal region before and after the operation. Skirving wonders whether these pains are associated with the diverticula.

5. **Opsonins in Practical Medicine.**—French presents a general review of this subject and reports three cases to indicate the benefits that he obtained from careful vaccine treatment, particularly in cases of local tuberculous mischief and in cases of staphylococcal troubles, such as acne, boils and abscesses.

6. **Temperature of Japanese Hot Baths.**—According to Hill, the Japanese can stand a bath hotter than can the Europeans. He says that the temperature of the Kusatsu mineral springs ranges from 100 to 160 F., while the baths are generally 113 to 128 F. The patients remain in this bath from three to four minutes, and take five baths every day.

The Lancet, London.

February 2.

7 *Pain in the Groin. W. Bennett.
8 *Idiopathic Cyanosis Due to Sulph-hemoglobinemia. S. West and T. W. Clarke.
9 *Causation and Treatment of Some Headaches. W. Harris.
10 Opsonins and the Opsonic Index and Their Practical Value in Treatment of Disease. G. A. Crace-Calvert.
11 Present Means of Combating Sleeping Sickness. A. Kinghorn and J. L. Todd.
12 Paratyphoid fever in the Tropics: Mixed Infection. A. Castellani.
13 *Transposition of the Viscera. F. E. Larkins.
14 Visual Efficiency of the Uncorrected Myope. J. H. Parsons.
15 Rôle of the Blood Plasma in Disease. H. Campbell.
16 German Methods of Meat Inspection as Carried Out in Berlin. H. A. Macewen.

7. **Pain in Groin.**—The cases reported by Bennett, 54 in number, had the following points in common: 1. Pain, continuous or intermittent, in the fold of the groin without swelling, tenderness or any other sign of lesion near the seat of pain. 2. An impression on the part of the patient that the cause of the pain was above or below the groin, as the case may have been, without being able to locate it. In the majority of cases, movements of the hip joint had no effect on the pain, but in some the pain was either produced or increased by extreme flexion or by forced extension. In these cases the pain was caused by many varying conditions, such as stone in the bladder and ureter, prolapse of the ovary, hernia, varicose veins, movable kidney, spinal abscess, disease of the rectum, tumor of the tibia, flatfoot, etc. Bennett presents the following conclusions: 1. Pain in the groin as an isolated symptom may arise from causes either so remote or unlikely that their existence would at first sight seem hardly worth consideration. 2. No examination in a case of pain in the groin can be effective unless it is made in the erect as well as in the horizontal position of the patient. 3. Distinctly localized pain in the presence of obvious organic disease of which the patient is aware may so assert itself as to lead to the gross condition being considered of little or no importance. 4. The belief in a "functional" or "psychic" pain would be greatly diminished

if in all cases of apparently unexplainable pain a more comprehensive search were made for a cause than is sometimes done.

8. **Idiopathic Cyanosis.**—West and Clarke report the history of a woman, aged 37, who suffered from idiopathic cyanosis due to sulph-hemoglobinemia. The most striking feature in the case was the color of the skin, resembling in tint that of silver staining, which made the patient look when asleep as if she were moribund. The cyanosis was universal. Pressure with the finger showed the skin when emptied of blood to be of the normal yellow hue. The patient was feeble, but otherwise presented no symptoms. Although the authors present several theories, a conclusion is not arrived at as to the cause of this affection. The point of chief clinical interest is the source of the sulphuretted hydrogen.

9. **Headaches.**—The headaches discussed by Harris are the paroxysmal and periodic variety, and those dependent on some form of toxemia.

13. **Transposition of Viscera.**—Larkins reports a case of this kind which was found at postmortem on an infant aged 12 months, dead of tuberculous meningitis. The heart lay in the center, inclining to the right. The right lung had two lobes; the left lung three. The esophagus lay to the left of the aorta till near the diaphragm, when it crossed over to the right. The stomach occupied the right hypochondrium and the duodenum proceeded to the left, being reflected round the head of the pancreas and turned back toward the right. The appendix was situated in the left iliac fossa and all the other organs in the abdominal cavity were reversed, including the vessels.

British Journal of Children's Diseases, London.

January.

17 *Alcoholic Cirrhosis of Liver in Children. E. Jones.
18 Historical Notes on Rickets. J. Burnet.

17. **Alcoholic Cirrhosis of Liver in Children.**—Jones reports two cases of alcoholic cirrhosis of the liver in children, one of the patients being aged 16 months and the other 2 years and 11 months. Although there was an alcohol history in both cases, the alcohol had not been administered in excess. The first patient had received wine, about a tablespoonful, twice a day, for 11 months, for the purpose of strengthening the child's health. The second patient, following an attack of whooping-cough, was given brandy, in doses of a dram, twice a day, for about five weeks. Both patients did well under treatment. Jones discusses the subject in general very fully. The article is to be continued.

The Australasian Medical Gazette, Sydney.

December 20.

19 Some Less Familiar Forms of Hydatid Disease from a Geographic and Pathologic Standpoint. A. Watson.
20 Progressive Muscular Atrophy, with a Case of Facial Type of Erb's Juvenile Progressive Muscular Atrophy. E. S. Littlejohn.
21 *Guaiacol in the Treatment of Typhoid. H. W. Bryant.
22 An Adjustable Axis-Traction Forceps. F. Barrington.
23 *Diverticula Spuria Intestinalis. E. A. Johnson.
24 *Treatment of Trachoma. E. T. Smith.

21. **Guaiacol in Typhoid.**—Bryant has treated at least 200 patients with guaiacol inunctions with only one death in the series. He says that the temperature is controlled easily in most cases, the patient feels better and the skin is kept moist, and very rarely does any diarrhea occur during the course of the treatment.

23. **Spurious Intestinal Diverticula.**—At least half a dozen cases of this kind have been seen by Johnson. He says that if medical men who conduct postmortems will keep a sharp lookout for this condition many more such cases would be found.

24. **Treatment of Trachoma.**—Smith has had most excellent results in the treatment of trachoma from the use of boric acid and protargol, the former for its mechanical effects, the latter for its chemical. After instilling cocain, a probe or match is mounted with absorbent wool twisted into a firm olivary knob. This is soaked in a 25 per cent. solution of protargol and then dipped in boric acid which coats it over. The eyelids are everted and the swab is rubbed over the whole surface of the palpebral conjunctiva until bleeding is produced. This causes a uniform scarification of sufficient intensity and little likely to cause scarring. The treatment is repeated daily. As the condition improves and the lids get smoother, the use of the boric acid is abandoned. Smith condemns the use of copper sulphate and silver nitrate.

Medical Press and Circular, London.

January 16.

25 Optic Neuritis and Its Relationship to Intracranial Tumors. R. A. Fleming.
26 Some Aspects of Pruritus. F. H. Barendt.
27 Medical Inspection of School Children. A. S. Arkle.
28 Letter to a Young Practitioner. G. Cornu.

January 23.

29 *Mental Risks of Adolescence. T. S. Clouston.
30 History of Ovariotomy. F. B. Jessett.
31 Tetania Parathyropriva. J. Erdheim.
32 The Hemo-renal Salt Index as a Test of the Functional Efficiency of the Kidney. D. Turner.

January 30.

33 Chronic Non-Suppurative Diseases of the Middle Ear. M. Yearsley.
34 Ventrofixation of the Uterus in Treatment of Backward Displacements. H. Briggs.
35 Infective Bronchitis and Its Relation to Tuberculosis. H. P. White.
36 Suffocative Hydrothorax in Which the Pleuræ Were Tapped Several Hundred Times. J. F. O'Carroll.

29. **Mental Risks of Adolescence.**—Clouston claims that the mental risk of adolescence is so great that 75 per cent. of the chronic insanity now existing in England results from it. Almost all the typical secondary dementias, and most of the delusional insanities arise out of, or have as a preliminary stage, attacks of adolescent insanity.

The Clinical Journal, London.

January 16.

37 Paralysis of the Legs in Women. J. A. Ormerod.
38 *Apoplexy and Its Treatment. L. Guthrie.
39 Diagnosis of the Common Swellings of the Long Bones. W. Trotter.

January 23.

40 *Two Cases of Scarlet Fever. A. K. Gordon.
41 Points in the Diagnosis of Urinary Disease. R. H. J. Swan.

January 30.

42 *Some of the Commoner Skin Diseases of Infancy and Childhood. R. Hutchinson.
43 Surgical Danger Signals in Acute Abdominal Disease. D. Power.
44 *Eye Diseases Associated with Sepsis of Neighboring Mucosæ. N. B. Harman.
45 San Remo and Some of Its Advantages as a Winter Resort. W. S. Eccles.

38. **Treatment of Apoplexy.**—Guthrie says that while treatment may be useless in grave cases, that is no reason why it should be withheld when the symptoms and physical signs suggest rational measures for their relief. In mild cases spontaneous recovery usually takes place and active treatment is, therefore, unnecessary and may be dangerous.

40. **Scarlet Fever.**—Gordon believes that in the polyvalent anti-streptococcus serum we have a remedy of great value in toxic cases of scarlet fever. It is essential, however, that an adequate dose should be given, not under 50 c.c., and that the serum shall have been freshly prepared—under a year old, in fact. The ordinary anti-streptococcus serum is useless.

42. **Common Skin Diseases of Infancy.**—Hutchison discusses specific, drug and parasitic rashes, intertrigo, eczema, impetigo, urticaria, sweat rashes, and erythemata. For the relief of itching he has found the following ointment efficacious. It must be rubbed in all over the body at night:

℞.	Beta-naphthol	gr. xvi	1
	Zinci oxidi	ʒi	4
	Unguenti	ʒi	30

44. **Eye Diseases Associated with Sepsis Elsewhere.**—According to Harmon, there are three modes of communication of disorders of the eye—direct, indirect and reflex. As examples of each are given destructive corneal ulcers, following on disease of the lachrymal duct and lachrymal sac; insidious and chronic forms of iridocyclitis arising coincidently with sepsis of the buccal cavity, and phlyctenular conjunctivitis or keratitis.

Bulletin de l'Académie de Médecine, Paris.

46 (LXXI, No. 3, pp. 105-136.) *Prophylactic Treatment of Arteriosclerosis. (Traitement de la présclérose.) H. Huchard.
47 Serotherapy of Tuberculosis. (Sérum antitub. de Marmorek.) C. Monod.
48 (No. 4, Pp. 137-159.) Fowl-Serum for Serotherapy of Tuberculosis. (Sérum des poules.) Vignier.

49 *Classification and Nomenclature in Medicine. (Classification, etc.) E. Lancereaux.
50 *Tuberculosis and Alcoholism in Canada. (Mission au Canada.) Triboulet.

46. **"Presclerosis."**—Huchard has been asserting that certain functional disturbances of the blood vessels, the result of some intoxication, if not combated in time, lead to the anatomic changes and symptoms of arteriosclerosis. He calls this state of arterial hypertension the stage of presclerosis, and insists that appropriate treatment may cure it and prevent the impending arteriosclerosis. He is unable to present pathologic anatomic data to sustain this view, but from the standpoint of therapeutics and the success of appropriate treatment he claims that these assertions have been amply confirmed. The physician's task is to recognize the "condition" early, to determine the degree and the greater or less permanency of the arterial hypertension, and of the accompanying, more or less pronounced, insufficiency on the part of the kidneys. He should strive to remove the cause, which is generally poison, from the digestive tract acting on the coats of the vessels and irritating the kidneys. He should restrict the patient to a milk and vegetable diet, limiting the intake of salt, supplementing the dietetic measures by drugs to dilate the vessels and to lower the arterial tension, reducing to the minimum the alimentary toxins in the organism and promoting their elimination early and always by suitable treatment of the kidneys and diuresis, and, finally, by sustaining the heart in its incessant struggle against the peripheral obstacles. Treatment along these lines, he declares, will ward off the anatomic lesions otherwise inevitable from the almost uninterrupted overwork on the part of the vessels and the numerous complications which are the result of intoxication of the organism. Huchard's views and technic were summarized on page 397 of vol. xli of THE JOURNAL, and page 2023 of vol. xlvi, 1906. He dwells here more particularly on the necessity for assisting the kidneys and the heart. For 12 years he has had the findings constantly recorded for every patient, a total of 13,000, including 10,000 with heart disturbances. It has been his frequent experience that patients with the signs of arterial hypertension when first seen, developed later, in the course of from two to four years or longer, all the cardiovascular and toxic phenomena of cardiorenal arteriosclerosis. In other similar cases, by curing the arterial hypertension and the concomitant renal insufficiency, the stage of arteriosclerosis was never reached. Robin's experience corroborates these statements, and he adds that they apply also to stomach pathology. Patients sometimes develop arterial hypertension in the course of an acute attack of dyspepsia, but it subsides with the attack at first. Later it is liable to persist. Huchard claims that if the lesions of arteriosclerosis are established during the stage of presclerosis—as some maintain—then we must recognize two phases of arteriosclerosis, the curable and the incurable. By combating the disease in the curable stage, it may be possible to ward off the incurable lesions.

49. **Classification of Diseases.**—Lancereaux and Paulesco comment on the haphazard way in which diseases have been named, and the necessity for a more scientific classification according to the data learned in recent years in regard to their origin. They urge the division of all maladies into five groups, those caused by physical agents, those caused by chemical agents and those caused by parasites, with the additional group of nervous disturbances resulting from any of the above, and the neoplasms as a fifth group. The natural sciences and chemistry have not hesitated to modify their nomenclature to conform to the progress of science, and medicine should do the same. They suggest the term "physinosis" for diseases due to physical agents, "cheminosis" for those due to chemical agents, "bionosis" for the parasitic affections, with "neuronosis" for the nervous affections and the termination "oma" for the neoplasms. In the subdivisions the termination "ism" should be retained, as at present, for the "cheminoses," while the "bionoses" should retain their present ending "osis," as in mycosis. The termination "pathy" after the name of an organ should be used as it is at present, in nephropathy, pneumopathy, etc. Instead of the vague terms gastritis, dermitis or the like, he would use the name of the organ, followed by "pathy," and preceded by the term expressing the physical, chemical or parasitic cause. This would establish the nomenclature on a solid basis, he claims, as the same causes always induce the same effects. A committee was appointed to discuss the subject and to report later.

50. **Tuberculosis and Alcoholism in Canada.**—Triboulet remarks that it seems strange that in the vast area of Canada and with the comfortable homes of the inhabitants that "overcrowding" is a prolific source of tuberculosis as much as in the crowded cities. Most of the rooms in the houses are kept shut up in the summer to keep out the sun and dust and in winter to keep out the cold, and the family congregates in a single living room. If one member of the family contracts tuberculosis the contamination of the whole family is almost inevitable. There is no isolation of the tuberculous in the hospitals. The death list from tuberculosis in Montreal was 700 during 1903, with a population of 300,000, and 2,200 tuberculous individuals were recorded. Alcoholism, on the other hand, is rare.

Archiv f. Gynäkologie, Berlin.

Last indexed, page 554.

51 (LXXX, No. 3, pp. 439-680.) Etiology of Wall or Ridge Surrounding Placenta. (Placenta circumvallata.) W. Liepmann.
52 *Experiences with Artificial Premature Delivery in Case of Mechanical Disproportion. (Künstliche Frühgeburt.) E. Möller.
53 Four Cases of Hypersecretion of Sweat and Sebaceous Glands in Axilla, in the Puerperium, accompanied by Swelling and Simulating True Secretion of Milk. (Hypersecretion der Schweiss und Talgdrüsen in der Achselhöhle.) L. Seitz.
54 *The Neutrophile Blood Picture in the Puerperium and Its Modification Under Streptococcus Serum. (Neutrophile Blutbilde im Wochenbett, etc.) O. Burkard.
55 *Study of Duration of Gestation. (Wann tritt die Geburt ein?) F. Schatz.

52. **Artificial Premature Delivery with Mechanical Disproportion.**—Möller reports the experiences at L. Meyer's maternity at Copenhagen, between 1892 and 1904, with 80 experiences with artificial premature delivery of 58 women. During this period, 21,066 childbirths are recorded, with contracted pelvis in 646 cases, about 3 per cent. of the total number. The mortality of the children, with induced premature delivery, was 20 per cent. higher than in the normal cases, but if the deliveries before the thirty-fifth week are excluded, the mortality was only 10 per cent. higher. The mortality after the first few days was approximately the same as for normally delivered children. Fully twice as many children were born alive with artificial premature delivery as in case of children carried to term by the same mothers.

54. **The Blood in the Puerperium Under Antistreptococcus Serum.**—The effect of the antistreptococcus serum was marked in all the cases in less than twenty-four hours, showing great destruction of the neutrophiles. The course of the cases confirmed the assumption that this destruction of neutrophiles is a salutary reaction to the serum. It was accompanied by a considerable increase in the total number of leucocytes, overcompensating the loss. This occurred, however, only in cases in which the organism was capable of a response to the serum. If no response is possible, the destruction of the neutrophiles, not being accompanied by an over-compensation, is liable to be directly injurious. The communication proceeds from Knauer's gynecologic clinic at Gratz, and is based on an experience of 16 cases of severe puerperal infection in which antistreptococcus serum was used. In 12 there was pure streptococcus infection, and in half of these the response to the serum was pronounced; all the patients rapidly recovered. In the other cases no influence from the serum was apparent and months elapsed before the patients had fully recovered.

55. **Predetermination of the Day of Birth.**—Schatz continues his article on this subject, the first part of which was published in volume lxxii. He here discusses the physiologic week, the physiologic double month, the various periods and periodicities and the various kinds of both in the human body and their combinations, striving to deduce conclusions for the predetermination of the date of delivery. The article is based on the study of 241 cases. He calls attention to the fact that the periodicity in the electric tension of the air, which

Arrhenius has demonstrated to be 27.3 days, is paralleled by the periodicity of menstruation which will very frequently be found also to be 27.3 days when the average of a long series is taken.

Beiträge zur klinischen Chirurgie, von Bruns,' Tübingen.

Last indexed, page 372.

56 (L, No. 3, pp. 667-819.) Retroperitoneal Ganglion Cell Neuroma. (Neuroma gangliocellulare amyelinicum.) E. Ohse.
57 *Surgery of Spleen. (Milz-Chirurgie.) M. Flammer.
58 Operative Treatment in 52 Cases of Gastric Ulcer (Ulcus ventriculi.) M. Hoffmann.
59 Blood Pressure During Artificially Induced Hyperemia. (Blutdruck bei der Bier'schen Stauung.) A. Hofmann.
60 *Operations on the Hypophysis. (Operationen an der Hypophyse.) H. Schloffer.

57. **Splenectomy.**—Flammer reports 5 cases in which the spleen was removed, for rupture in 3 and for a chronic, infectious tumor in the spleen, or for Banti's disease in the others.

60. **Operations on the Hypophysis.**—Schloffer has found that, on the cadaver, the best means of access to the hypophysis is by turning back the soft parts of the nose, with temporary resection of the upper jaw. This technic is preferable in the clinic, also, he states, in case the patient is strong enough to stand it. If one eye is partially or entirely blind, it might be better to turn back the nose from one side with resection of the wall of the orbit. He believes that the hypophysis can be successfully operated on without injury of neighboring organs, with the aid of the *x*-rays, especially if the operation is done in two sittings. He does not believe that malignant disease of the hypophysis indicates operative treatment, as the merely palliative results are not enough of an advantage to outweigh the gravity and difficulty of the operation. In acromegaly he advises operation only when the symptoms are exceptionally severe and distressing. He discusses the physiologic importance of the hypophysis and the various pathologic processes likely to occur in it.

Deutsches Archiv f. klinische Medizin, Leipsic.

Last indexed, page 555.

61 (LXXXVIII, Nos. 4-6, pp. 325-618.) *Length of Survival of the Tuberculous in Norway. (Lebensdauer der Schwindsüchtigen.) F. Holst, L. Nicolaysen and Y. Ustvedt.
62 *Disturbance of the Chemical Correlations in the Organism. (Störung der chem. Korrelationen.) L. Krehl.
63 *Normal and Pathologic Emphysema. Mechanism and Treatment. (Mittellage und Vitalkapazität der Lungen.) C. Bohr.
64 *Blood Formation in Severe Anemia and Leukemia. (Blutbildung, etc.) E. Meyer and A. Heineke.
65 Atypical Severe Anemias. (Atyp. schwere Anämien.) P. Morawitz.
66 *The Colon-typhoid Group in Relation to Affections of the Biliary Passages. (Colityphusgruppe.) F. Blumenthal.
67 *Influence of Hydrochloric Acid on Pepsin Digestion. (Einfluss der Salzsäure auf die Pepsinverdauung.) A. Müller.
68 *Elimination of Euglobulin in the Urine in Case of Amyloidosis. (Ausscheidung von Euglobin im Harne bei Amyloiderkrankung.) E. Zak and F. Necker.
69 *Polyuria with Contracted Kidney. (Vorkommen der Polyurie bei Schrumpfniere.) M. Nagel.
70 *Heart Block. (Leitungsstörung im Herzmuskel.) G. Joachim.
71 Fibrinous Bronchitis in a Consumptive. (Bronch. fibr. bei einem Tuberkulösen.) E. Gottstein.
72 *Reciprocal Relations Between the Various Syndromes of Typhoid Fever. (Wechselverhältnis zwischen den verschiedenen Symptomkomplexen des Abdominaltyphus.) W. Ebstein.
73 Percussion. (Das Plessimeter.) R. Geigel.
74 Spiral Form of Nuclei in the Contracted Heart Muscle. (Spiralwindung der Herzmuskelkerne.) W. Heubner.
75 Case of Occasional Heptosuria. (Zeitweise Heptosurie.) F. Rosenberger.
76 Agglutination of Typhoid Bacilli in Proteus Infection. (Aggl. von Typh.-Bac. bei Proteusinfektion.) Steinberg.

61. **Length of Survival After Tuberculous Infection.**—The large proportion of survivors retaining their earning capacity after nine years is a striking feature of this statistical summary of conditions in Norway. Four of the principal life-insurance societies of the country paid physicians for their trouble in filling out and returning the question blanks sent to them by a committee appointed by the Christiania Medical Association. The probabilities of survival, according to these statistics based on the living and the dead, are that about 50 per cent. will die within 36 or at most 42 months. Correcting these statistics by basing them on the dead alone, the average length of survival was between 36 and 59 months after the first appreciable clinical symptoms. The figures tabulated show that of 2,002 tuberculous men and women, 908 were living after the fourth year, and 52.3 per cent. retained their earning capacity. After the ninth year, 322 were still alive, with 67.4 per cent. retaining their earning capacity. The statistics are classified according to various methods and the findings compared.

62. **Disturbance of the Chemical Correlations.**—Krehl remarks that the method of direct treatment is undoubtedly the method of the future, but internal medicine still uses the indirect methods, and he shows by a number of concrete examples the mechanism of this indirect influencing of morbid conditions. Theoretical research is now gradually supplying the solid foundation for the therapeutic procedures built on empirical observation of the chemical action of one organ on other organs. The "chemical messengers" were discussed editorially in THE JOURNAL, Feb. 9, 1907, page 524. Krehl reviews their action in the disturbances of the menopause, in eclampsia, in tetany, nephritis, etc., remarking that the physiology and pathology of the future will probably place the chemical activity of the leucocytes in the foreground. Their universal appearance wherever active chemical processes are going on in the body and their relations to all the tissues indicate the general importance of the substances contained in them and their joint action with numerous other substances. The practical result of these theoretical studies is the increasing realization of the importance of treatment of the general condition of the patient in all cases. He adds that when we seek for the true essential element of the success of the great physicians, we always find—aside from the impress of their personality—an insight into and skilful treatment of the general condition as the predominant factor in the treatment of affections of single organs. Every individual has his own chemical make-up, his own special intermediate metabolism which may resemble as a whole those of others, but in certain points may differ widely from others. Study of the chemical correlations shows the tendency displayed by the cells to adapt themselves to the disturbing elements brought to them by disease-causing elements, this tendency always striving toward a spontaneous cure. Everything that stimulates the cells to overcome the disturbing influence favors the spontaneous cure. Study of the chemical correlations also shows how increased functioning or possibly merely a modification in the functioning of other tissues, which apparently have nothing to do with the organ directly affected by the disease, may yet have an indirect favorable action on the elimination of the disease-cause.

63. **Functional Changes in the Capacity of the Lungs.**—Bohr discusses what he calls normal and pathologic emphysema, the vital capacity, and the vital medium capacity, that is, the amount of air taken into the lungs in ordinary breathing, the residual air, the influence of the attitude and of muscular exertion on the medium and extreme capacity in ordinary air and with oxygen and carbon dioxid, etc. When the action of the lungs is increased in response to increased circulation of blood through them, temporary emphysema is normally induced. Emphysema in pathologic conditions should be regarded in the same light, he says, that is, as an ingenious reflex action designed to counteract the functional disturbances induced by the underlying affection. It is irrational to suppress it.

64. **Blood Formation in Anemia and Leukemia.**—Meyer and Heineke relate experiences which demonstrate, they think, that the changes in the blood in anemia and leukemia are not caused by a perverted formation of blood, but are merely the response of the blood-forming organs to some injurious influence affecting the blood primarily. This response is entirely different in myeloid and in lymphatic leukemia. In the myeloid form the myeloid transformation going on in the liver and spleen restores to these organs the aspect and functions of embryonal existence. All the changes observed in the course of pernicious anemia in the various blood-forming organs, he states, are compensating processes against primary injury of the blood, and not megaloblastic degeneration of the bone marrow. The process of myeloid transformation of the liver and spleen can be induced in rabbits by injury of the blood. The process of regeneration in the blood-forming organs in these cases parallels the restitution of the blood picture and general condition.

66. **The Colon-Typhoid Group in Relation to Affections of the Billiary Passages.**—Blumenthal reports a number of cases showing the predominance of the colon bacillus and the typhoid bacillus in the etiology of biliary affections. The colon bacilli found differed in some respects from the ordinary *Bacillus coli communis*. If the latter is found it generally proves to be a secondary invasion, probably by way of the blood. In one of the cases reported the first symptoms of cholecystitis were observed seven years after typhoid fever, but typhoid bacilli could be cultivated from the bile. In another case typhoid bacilli were found in the normal biliary apparatus six months after the patient had recovered from typhoid fever. In another case severe cholecystitis developed and typhoid bacilli were cultivated from the bile after cholecystostomy, but there were no symptoms to suggest typhoid fever at the time or previously. The agglutination test was at first negative, but later gave positive findings. In 3 other cases primary typhoid or paratyphoid infection of the gall bladder caused a more chronic cholecystitis. Blumenthal reviews a number of similar cases of extra-intestinal localization of typhoid infection, simulating and listed as pneumonia, nephritis, cholecystitis, etc., entirely free from symptoms on the part of the intestines. The bacilli probably reach the biliary apparatus by way of the blood, and may lurk there undetected for years, passing at times into the intestine and voided in the stools, thus proving a source of infection for others, the more dangerous as nothing in the past of such persons suggests the possibility of their being bacilli carriers. It is notable, he adds, that in nearly every instance bacilli carriers suffer from gallstones. The agglutination test is valuable in such cases, being positive in his experience in every case, both chronic and acute, when typhoid infection was present or had been present at any time. No connection between agglutination and icterus was evident. Operative intervention is the only means known to date for the certain removal of typhoid bacilli from the gall bladder. Paratyphoid bacilli vanished from the stool in one case after a gallstone operation, and examination a year later confirmed their absence. The typhoid bacilli also vanished from the stools in from 11 to 15 days after the gallstone operation in the cases reported.

67. **Influence of Hydrochloric Acid on Pepsin Indigestion.**—Müller's conclusions from his research are to the effect that the best conditions for digestion of albumin occur when the albumin is dissolved in a low concentration and the total bound acidity is low. Increasing amounts of free hydrochloric acid then promote the pepsin digestion to a certain favorable point, which remains constant. In case of high total acidity, the same amounts of free hydrochloric acid have no influence on the pepsin digestion, he states, or may possibly hinder it. From this point of view gastric digestion may be divided into two types: The first characterized by more solid consistency of the stomach content, high total acidity, lack of free acid (dogs, cats); the second by more fluid stomach contents, low total acidity, and an excess of free hydrochloric acid (man, pigs). The facts cited explain, he believes, the numerous contradictory findings in the literature and the behavior of the free hydrochloric acid in the various animal species.

68. **Elimination of Euglobulin in Amyloid Affections.**—Zak and Necker describe 11 cases of amyloid degeneration of kidney, liver or spleen in which the discovery of euglobulin in the urine revealed the existence of the amyloidosis. They describe the technic for the determination of euglobulin and assert that positive findings will be found a valuable aid in the differentiation of amyloid affections.

69. **Polyuria with Contracted Kidney.**—Nagel found polyuria in 47 per cent. of 63 cases in which the diagnosis of contracted kidney was confirmed by the postmortem findings. Excluding 7 patients in whom the polyuria was evidently the result of the subsidence of edema, this leaves only 33.3 per cent. Nocturnal polyuria was observed in 25.5 per cent.

70. **Disturbance in the Power of the Heart Muscle to Conduct the Impulse.**—Joachim relates the further history of the 4 patients whose cases were described in volume lxxxv of the *Archiv*, and reports 2 new cases of unmistakable disturbance in the power of the heart muscle to pass the impulse onward from the auricle. One is particularly interesting, as the gradual return to normal could be traced. This patient was a robust young workman, with acute endocarditis accompanying recurring polyarthritis. The typical symptoms of disturbance in the conductibility occurred abruptly, and subsided again; they had entirely vanished by the end of the second day. No cause for it could be ascertained. If the radial pulse and the cardiogram alone had been the criteria, the disturbance of the conductibility would not have been discovered. The venous pulse gave the clue.

72. **Reciprocal Relations Between Various Syndromes of Typhoid Fever.**—Ebstein describes a case of typhoid fever with extremely violent nervous disturbances and only insignificant typhoid lesions in the intestines, and reviews others like it from the literature. They suggest the possibility, he remarks, that mixed infection occurs with typhoid more frequently than has been generally supposed. The secondary germs may penetrate from without, but the probability is stronger in favor of the coincidence of typhoid fever and sepsis from autointoxication. If serum treatment of typhoid fever is to be successful, this possible factor in the symptom-complex must not be neglected.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

77 (XXXIII, No. 3, Pp. 89-128.) Behavior of Certain Reflexes During Sleep. (Verhalten einiger Reflexe im Schlaf.) R. Kutner.
78 Fat from the Bodies of Streptothrix an Effectual Immunizing Substance for Leprosy. (Ein bakterielles Fett als imm. Substanz bei der Lepra.) Deycke Pascha and Reschad Bey.
79 *Treatment of Fracture of Humerus During Birth. (Behandlung der intra partum entstandenen Humerusfrakt.) C. Stuhl.
80 Treatment of Large Umbilical Hernia. (Grosse Nabelschnutbrüche). L. Fiedler.
81 Thermophore Cap and Brow Bandage. (Elastische Thermokopfkappe und Thermostirnbinde.) L. Gross.
82 Public Provisions for Pregnant Women with Venereal Disease and for Children with Inherited Syphilis. (Geschlechtskranke Schwangere und hered. syphilitisch Kinder.) A. Buschke. Commenced in No. 2.
83 Medical Notes from the Gold Coast. (Aerztliche Erfahrungen, etc., auf der Goldküste.) H. Vortisch.

79. **Fracture of the Humerus During Birth.**—Stuhl gives illustrations of a simple method of pulley extension with a half pound weight which he used for the fractured humerus of a new-born infant. He allowed the skin to dry out for two days after birth, and then adjusted the adhesive plaster dressing, splint and extension, with the infant lying in its wagon, the pulley was fastened to the handle of the wagon. The child, who had screamed constantly with the pain, quieted at once after extension was applied, and the results, functional and otherwise, were most excellent.

Münchener medizinische Wochenschrift.

84 (LIV, No. 3, pp. 105-152.) The Air and the Lymph in Origin of Pulmonary Tuberculosis. (Aero-lymphogene Lungentuberkulose.) N. P. Tendeloo.
85 *Transmission of Syphilis to Rabbit Eye. (Exp. Uebertragung der Syph. auf Kaninchenaugen.) A. Schucht.
86 *Rudimentary Eventration. (Rud. Eventration.) F. A. Hoffmann.
87 *Sanatorium Treatment of Heart Disease, and Its Indications. (Anstaltsbehandlung der Herzkranken.) T. Büdingen.
88 *Permanent Cures with Tuberculin Treatment. (Dauererfolge mit Tub.-Behandlung.) W. Roemisch.
89 *Treatment of Delirium Tremens. (Del. tremens.) S. Ganser.
90 Care of Idiots in Germany. (Idiotenfürsorge.) W. Weygandt.
91 Treatment of Hammer Toe. (Hammerzehe.) Mittermaier.
92 To Find the Round Ligament in the Inguinal Canal. (Lig. rotunda im Leistenkanale.) Reismann.
93 Breast Pump to Obtain Aseptic Milk. (Neue Milchpumpe.) W. Kaupe.
94 Polyneuritis of Fowls and Beriberi Not Due to Oxalic Acid Poisoning. (Polyneuritis der Hühner und Beri-Beri, eine chron. Oxalsäurevergiftung?) F. Eijkmann.

85. See editorial in THE JOURNAL, page 613.

86. **Practical Importance of Rudimentary Eventration.**—The conditions caused by displacement of internal organs are likely to be mistaken for affections with which they have nothing to do, and treatment based on this erroneous conception is apt to aggravate the symptoms. Distension of the stomach or intestine may push the diaphragm up on one side, and, if the diaphragm is weakened from any cause, it is liable to stretch permanently. The patients complain of feeling puffed up, especially after meals, and the region below and near the left hypochondrium protrudes. Heart disturbances are observed at the same time, oppression in the chest and

short breathing, with pronounced irregularity of the pulse and sometimes distress. These symptoms may increase to actual dyspnea, with cramp-like pains radiating to the left shoulder and to the right side, with possibly syncope. Roentgenoscopy clears up the diagnosis by showing the eventration, and treatment to avoid distension of the stomach and constipation will save the patient from severe disturbances and promote the restoration to normal of the parts. Hoffmann called attention to this class of cases some time ago, calling the condition "chronic balloon stomach" (Magenblase), and describes some cases in which he was able to trace the development of the condition almost from the first, with reproductions of some of the radiographs. Small amounts of food at a time and avoidance of much drinking and of soups and milk will help to avert distension, but still more important, he says, is the care of the left diaphragm. No violent exercise should be allowed, no running, lifting or carrying heavy weights, but the diaphragm should be strengthened by systematic exercises. Deep inspiration as the left arm is lifted, with pressure on the right side, several times a day, with the clothing removed, is the first step in such treatment, and Faradization may be useful as an adjuvant.

87. **Institutional Treatment of Heart Affections.**—Among the points emphasized by Büdingen is the great value of the rest cure in treatment of heart affections, and the benefit of quiet. In his sanatorium he has one hall in which no talking is allowed, and the patients are relieved from questions and chatter, although in the other halls there are no such restrictions. In health, the difference between the pulse, lying and standing, amounts to 9 beats in a minute, as a rule, a saving of 8,640 contractions of the heart in the course of the day. When the heart is irritable and weak this difference may amount to 30 or 40 a minute, with a total saving during the day of 28,800 contractions. The rest cure is taken out of doors part of the day, sometimes on one of the lake steamers. Everything is done to eliminate all the extra irritations of life; too affectionate and anxious friends are excluded. Büdingen allows alcohol only as a medicine, with extremely rare exceptions. He has a trained physician for each 20 or 30 patients, and the physicians meet for conference every day. Dietetic regulations are much better enforced in a sanatorium, he declares, than at an ordinary health resort, and this is especially important in case of heart disease. In impending or existing insufficiency of the heart, with complicating arteriosclerosis, he has found a milk diet useful, as also milk porridges. Whether to send a patient to a sanatorium or to a health resort depends not only on the severity of the heart affection, but also on the patient's temperament, whether he needs distraction or quiet. The optimists, who regard each trifling improvement as a complete cure, and then overtax their powers, belong in the sanatorium, as also patients with strong will who stride ahead forgetting their bodily weakness, and also lazy patients who need spurring.

88. **Remote Results of Tuberculin Treatment.**—Four years ago Roemisch of Arosa published an account of his success with tuberculin in treatment of pulmonary tuberculosis. He has since had more extensive experience, the results confirming his previous assertions. Acute febrile cases contraindicate tuberculin; its special field is in the cases of long-continued, obstinate tuberculosis, dragging along for months unimproved by other measures. He keeps the dosage at the point where a local reaction is induced without a violent reaction. The signs that the limits of tolerance are being passed are disturbance in the general health, depression, loss of appetite, disturbed sleep, pains of varied kinds and increased expectoration. A slight rise of temperature is significant, especially in the morning and evening. He has found it a great assistance to change from one make of tuberculin to another at times, thus being able to continue without reducing the dose when symptoms of disturbance appeared.

89. **Treatment of Delirium Tremens.**—Ganser witnessed the collapse and death of a robust man in delirium tremens while being given a prolonged warm bath. One of his patients succumbed in collapse during a wet pack, and he has consequently abandoned these measures. In treatment of 1,051 cases of delirium tremens in the last 16 years, he has made it a rule to allow no alcohol. In the first series of 486 cases the mortality was 6.37 per cent., while in the last 565 cases it has been only 0.88 per cent. He ascribes this improvement in the results to his observation of the fact that the cause of death in delirium tremens is generally paralysis of the heart, and he now addresses treatment to the heart regardless of whether cardiac symptoms are apparent or not. The agitation and motor excitement reacts on the heart, and signs of heart weakness soon become manifest. He makes it a rule to give digitalis from the very first, giving 1.5 gm. in an infusion in the course of the day and repeating this dose two or three times. If it can not be given by the mouth, he gives it in a rectal injection. At the first signs of heart weakness other heart tonics are used; 1 gm. of camphorated oil is injected subcutaneously every hour or so until the critical symptoms subside. A tablespoonful of ice-cold champagne every half hour was also found useful—the only way in which he allows alcohol. To promote the washing out of the toxins causing the attack, he has the patients drink copiously, and supplies them for the purpose with a drink which has the color of beer and tastes refreshing, and is taken eagerly by the delirious patient. It is merely a 1 per cent. solution of sodium acetate in water, to which a little common syrup has been added.

Riforma Medica, Naples.

Last indexed XLVII, page 278.

95 (XXII, No. 48, pp. 1317-1344.) *Importance of Abstinence from Alcohol in Treatment of Cardiovascular Affections. (Malattie cardio vascolari.) G. Galli.

96 *Autoserotherapy in Serofibrinous Pleurisy. (Cura di Gilbert nelle pleuriti.) F. Fede.

97 *Atypical Form of Amyotrophic Lateral Sclerosis. (Sclerosi lat. amiotrofica.) A. Santini.

98 (No. 49, pp. 1345-1372.) Two Cases of Sarcoma in Retained Testicle. (Sarcomi in testicoli ritenuti nella cavita addom.) V. Cocuzza.

99 Suture of the Heart. Recovery. (Sutura del cuore.) G. Bufalini.

100 *Dechloridation in Treatment of Heart Affections. (La cura declorurante nelle malattie di cuore.) R. Massalongo and G. Zambelli.

95. **Importance of Abstinence from Alcohol in Treatment of Cardiovascular Affections.**—Galli comments on the wide difference in the views entertained by physicians in regard to the use of alcohol in treatment. The sudden suppression of alcohol, in persons addicted to its use, in the course of pneumonia may entail serious symptoms. The metabolism is exaggerated in this disease, and the excessive drain on the albumin and fats can not be met by rational feeding, so here alcohol answers a purpose. With affections of the heart and vessels the conditions are entirely different. Patients with failing compensation, edema and pronounced arrhythmia, habituated to the use of alcohol, can drop it suddenly and completely and benefit enormously thereby. His experience with 60 cases has been decidedly favorable to the absolute suppression of alcohol in case of any tendency to cardiac incompetency, even for hard drinkers, and Hernung says the same from an experience with 1,450 cases. Galli comments on the idea that alcohol gives strength, citing researches which prove that it is detrimental to literary work and that soldiers and others taking alcohol, even in small amounts, feel fatigue more readily. Galli's own special research at Baccelli's clinic has demonstrated that alcohol has a tendency to induce dilatation of the heart while lowering the blood pressure. This is noticeable even in healthy persons. Roentgen examination by the orthodiagraphic method shows that the diameter of the heart may increase by 2 cm. in the course of a few hours, even when the patient is in complete repose. The sphygmomanometer and tonometer show that during the first 10 minutes the blood pressure rises, but then it falls, the difference in the pressure reaching 30 mm. at times. It is this first rise in the blood pressure which has been the cause of the general and mistaken impression in regard to the strengthening action of alcohol, and has led to the abuse of small doses of alcohol in physical and nervous exhaustion or depression from any cause. This abuse forms a grave vicious circle, as larger and larger doses are required each time to produce the desired effect. Even when a stimulant is really needed the physician should not use alcohol, but some other tonic or some external manip-

ulation which would answer the same purpose. If physicians would do this, they would aid greatly in abolishing the popular prejudice in regard to the tonic action of alcohol and further the solution of the great and serious problem of alcoholism. The need of a stimulant is not so frequent as many suppose. In persons addicted to the use of alcohol the supposed need is merely the effect of the depression resulting from the preceding dose. Suppression of alcohol raises the resisting powers so that operations can frequently be undertaken which had little prospect of success before. Even in elderly persons with heart affections, Galli has been able to withdraw as much as 2,400 gm. of effusion from the pleura and then have the patient stand for orthodiagnostic examination, without any modification in the pulse or respiration or tendency to faint. In cardiovascular affections, the preceding use of alcohol may have been the principal or at least an adjuvant factor. He ascribes the increasing number of cases of heart weakness and heart failure to the increasing use of alcohol. Patients on the road to recovery from pneumonia or the like succumb suddenly to heart failure, as the heart muscle has been weakened by the use of alcohol. He urges physicians to study the effects of what he calls "small alcoholism" in their hospital patients, and to separate them into two groups, those treated with and without alcohol, to study its pathologic action on a large scale.

96. **Autoserotherapy in Pleurisy.**—Fede reports 5 patients with pleurisy treated by withdrawal of 1 c.c. of the pleural effusion, which was then reinjected at another point, near the posterior axillary line, on the other side. This was repeated three times, on successive days, in the acute cases, and the effects were excellent. No other treatment was used, and in every case recovery was rapid. In more chronic cases a larger amount of the effusion was reinjected, up to 4 c.c. and more. There was no reaction, local or general, except in one case of tuberculous origin, and in this the prostration and rise in temperature subsided during the night. The reaction always observed in the tuberculous cases and never in the others, suggests that this measure might serve to differentiate them.

97. **Atypical Lateral Amyotrophic Sclerosis.**—The symptoms and postmortem findings in the atypical case reported are described and illustrated. The affection had an almost acute onset, and ran a very rapid progressive course in eight months with intense, continuous pain with paroxysmal exacerbations, and localization of the contractures and of the amyotrophic changes solely in the flexor muscles of the legs, absence of the tendon reflexes, paralysis of rectum and bladder, and trophic disturbances in the skin. The lesions of Charcot's disease were accompanied by those of chronic leptomeningitis with involvement of the posterior spinal roots.

100. **Deprivation of Salt in Treatment of Heart Affections.**—Massalongo and Zambelli give the particulars of 3 cases of severe cardiac defects carefully studied under the influence of dechloridation. The first patient was a woman of 36 with mitral stenosis, the relics of acute articular rheumatism two years before. The second patient was a man of 59 with chronic aortitis in the cardio-mitral stage of aortic insufficiency, with extensive edema of the legs and slight pulmonary edema and the hypochondriac organs enlarged and congested. The third patient was a woman of 30 in the eighth month of pregnancy, with complete asystoly from mitral insufficiency and stenosis consecutive to rheumatic infection. Experience with these cases and review of the literature have confirmed anew, he declares, the importance of sodium chlorid in the phenomena of asystoly and edema in case of cardiac incompetency. Retention of sodium chlorid is a constant phenomenon in such cases during failing compensation, and the retention of sodium chlorid is accompanied by dropsical accumulations in the tissues. In these circumstances mere restriction of the amount of salt ingested daily in the food may be sufficient to restore the balance and it may be followed by retrogression of the signs and symptoms of cardiac disturbance. Testing with restriction of salt is an excellent means for investigating the functional condition of the heart, both for diagnosis and prognosis. When mere dechloridation alone is not enough to banish the signs of asystoly, then administration at the same time of a diuretic or heart tonic will accelerate its effect. On the other hand, the heart tonic or the diuretic alone may not be able to display its characteristic and needed action until it is supplemented by withdrawal of salt from the food. As the intake of salt is reduced, the output of urine is increased and this relieves the edema and thus removes the peripheral obstacles to the action of the heart. Dechloridation has thus not only a dehydrating and regulating action on the heart functions, but also serves to relieve the system of the deleterious action of the other elements of the urine retained with it, and thus wards off uremic phenomena or dispels them if already present. Determination of the daily elimination of the chlorids in the urine should be the guide for all therapeutic indications for patients with cardiopathies. It is necessary for the physician to have an exact knowledge of the various articles of diet and of their salt content. Massalongo and Zambelli gave their patients milk and unsalted bread and unsalted meat, supplemented in the pregnant woman with a diuretic. Milk alone contains too much salt for dechloridation purposes, especially as it introduces so much fluid into the organism.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

DISEASES OF THE LUNGS. Designed to be a Practical Presentation of the Subject for the Use of Students and Practitioners of Medicine. By Robert H. Babcock, A.M., M.D., Consulting Physician to Cook County Hospital. Twelve Colored Plates and 104 Text Illustrations. First Edition. Cloth. Pp. 809. Price, $6.00. New York: D. Appleton & Co., 1907.

ESSENTIALS OF OBSTETRICS. By Charles Jewett, A.M., M.D., Sc.D., Professor of Obstetrics and Gynecology in the Long Island College Hospital, assisted by Harold F. Jewett, M.D. Third Edition Revised and Enlarged. Thirty Illustrations and Five Colored Plates. Cloth. Pp. 413. Price, $2.25 net. Philadelphia: Lea Bros. & Co., 1907.

MEDICAL DIAGNOSIS. A Manual for Students and Practitioners. By Charles Lyman Greene, M.D., Professor of the Theory and Practice of Medicine in the University of Minnesota. With Seven Colored Plates and 230 Illustrations. Flexible Leather. Pp. 683. Price, $3.50. Philadelphia: P. Blakiston's Son & Co., 1907.

TWENTY-FIRST AND TWENTY-SECOND ANNUAL REPORTS of the Board of Managers and Superintendent of the North Texas Hospital for the Insane, Terrell, Texas. J. S. Turner, M.D., Superintendent. From Sept. 1, 1904, to Aug. 31, 1906. Paper. Pp. 61. Austin: Von Boeckmann-Jones Co.

A STUDY OF THE HUMAN BLOOD VESSELS IN HEALTH AND DISEASE. A Supplement to "The Origin of Disease." By Arthur V. Meigs, M.D., Physician to the Pennsylvania Hospital. One Hundred and Three Illustrations. Cloth. Pp. 136. Price, $5.00. Philadelphia: J. B. Lippincott Company, 1907.

SPECIAL BULLETIN OF THE STATE BOARD OF HEALTH. Sanitary Legislation in the United States Enacted During the Year 1906. Compiled for the State Board of Health of Rhode Island by Charles V. Chapin, M.D. Cloth. Pp. 102. Providence: E. L. Freeman Company.

COMPEND ON BACTERIOLOGY, Including Animal Parasites. By Robert L. Pitfield, M.D., Pathologist to the Germantown Hospital. Four plates and 80 Other Illustrations. Cloth. Pp. 232. Price, $1.00. Philadelphia: P. Blakiston's Son & Co., 1907.

NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS. Transactions of the Second Annual Meeting, Washington, D. C., May 16 to 18, 1906. Paper. Pp. 638. Lancaster, Pa.: The New Era Printing Co.

SEX AND SOCIETY. Studies in the Social Psychology of Sex. By W. I. Thomas, Associate Professor of Sociology in the University of Chicago. Cloth. Pp. 325. Price, $1.50. Chicago: The University of Chicago Press, 1907.

THE NEW HYGIENE. Three Lectures on the Prevention of Infectious Diseases. By Elie Metchnikoff, with preface by E. Ray Lankester. Cloth. Pp. 104. Price, $1.00 net. Chicago: W. T. Keener & Co., 1906.

EIGHTEENTH ANNUAL REPORT OF GRACE HOSPITAL, Detroit, Mich. Incorporated Nov. 28, 1888. Opened for Reception of Patients Dec. 6, 1888. Paper. Pp. 42. Detroit: Lawrence Printing Co.

FOURTH ANNUAL REPORT OF THE COMMITTEE ON THE PREVENTION OF TUBERCULOSIS of the Charity Organization Society of the City of New York. For the Year 1905-1906. Paper. Pp. 141. New York.

TWENTY-THIRD ANNUAL REPORT OF THE KENSINGTON HOSPITAL FOR WOMEN, for the Year Ending Oct. 1, 1906; 136 Diamond St., Philadelphia. Paper. Pp. 33.

MONTHLY SUMMARY OF COMMERCE AND FINANCE OF THE UNITED STATES. December, 1906. Paper. Pp. 1362. Washington: Government Printing Office, 1907.